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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

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INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1912.

(No. 32; Nos. 34093 TO 34339.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1912 (NO. 32; NOS. 34093—34339).[1]

INTRODUCTORY STATEMENT.

This inventory covers a period during which no agricultural explorer was in the field and all the collections were made either by collaborators, American diplomatic or consular officials, representatives of other nations, or interested amateurs who are scattered over the world and who send in on their own initiative seeds of the plants which interest them and which they believe may prove to be of value to this country.

The most interesting introductions included in this inventory, so far as one can judge from the descriptions received with them, may be summarized as follows:

No. 34131, a small-fruited variety of peach from Guadeloupe, French West Indies, sent by Mrs. F. T. F. Du Mont, which has more perfume and savor than the Florida peento; No. 34132, *Sorbus tianschanica*, from central Asia, a shrub or small tree suited to the cool semiarid regions of the United States; No. 34134, *Prunus sibirica*, a species related to the apricots of eastern Siberia, to be used for breeding purposes; Nos. 34140 to 34145, six species of junipers from Russian Turkestan, for use in afforestation work in the arid West; No. 34147, *Medicago coronata*, from Jerusalem, a species found on rocky mountain sides, which reseeds with ease, for use in extensive breeding experiments being carried on at various places throughout the country; No. 34153, *Carissa ovata*, from New South Wales, a drought-resistant species with small fruit, which will interest the hundreds of Florida planters who are growing the *Carissa grandiflora;* No. 34156, a species of Omphalea, a tree of the Euphorbiaceæ, which bears edible nuts, slightly resembling the cob nut, according to the literature; No. 34157, *Persea lingue*, from Chile, a possible stock for the avocado; No. 34161, *Strychnos gerrardi*, from Portuguese

[1] A record of new or little-known seeds and plants, procured mostly from abroad, for distribution to experimenters in appropriate locations throughout the United States and its possessions.

This inventory is intended for distribution to the agricultural experiment stations and to the more important private cooperators.

East Africa, an edible-fruited relative of the Kafir orange, *S. spinosa*, which has proved adapted to southern Florida and of which fruiting specimens are now growing at Miami; No. 34163, *Antidesma bifrons*, a euphorbiaceous shrub from Natal, with edible fruit, suited possibly to southern Florida; No. 34177, *Boscia undulata*, the tree which furnishes wood for wagon makers in South Africa, the ash of the South African forests; Nos. 34184 to 34194, 11 varieties of cotton collected by various field men connected with the Bureau of Agriculture at Manila; Nos. 34195 to 34197, three Algerian clovers cultivated and selected by Mr. G. W. Oliver; Nos. 34199 to 34205, seven varieties of mangos from Mauritius, three grafted and four which are said to come true from seed; No. 34210, a species of edible-fruited Spondias from San Jose, Costa Rica, which is propagated by cuttings; No. 34213, suckers of the famous Medjhool date, from the Tafilelt region of southeastern Morocco, the first suckers of this remarkable date to be imported into this country, where thousands of seedlings are already growing as the result of previous introductions of the seeds; No. 34214, sent by Dr. Yamei Kin, seed of a Chinese corn having a waxy endosperm, similar to a previous introduction which has been used in making many interesting hybrids; No. 34216, a remarkably delicate, practically odorless strain of Pai ts'ai, or Chinese cabbage, which has proved of unusual promise for late summer planting, owing to its extremely rapid growth; No. 34219, the doum palm of Upper Egypt and the Sudan, the seeds of which are employed by manufacturers in Germany as a substitute for vegetable ivory; No. 34252, a native Caucasian beet from the shores of the Black Sea, for the use of beet breeders; No. 34254, the Bolivian black walnut, a variety of *Juglans nigra* which may grow in our tropical possessions; No. 34257, wild teosinte from Durango, Mexico, which will interest the corn breeders, for it is said to cross readily with maize; No. 34259, *Echium auberianum*, a new blue variety of this striking ornamental, which deserves to be tested in the Southern States, its 10-foot flower stems making it a most striking landscape plant; No. 34263, *Bischofia javanica*, a remarkable ornamental tree from Java, of which specimens now growing in northern Florida give an indication of its being a desirable shade tree for that State; Nos. 34264 to 34272, a collection of plums, apricots, and filberts made in Rome by Dr. Gustav Eisen, some of which he believes superior to any varieties with which he is familiar in California; No. 34289, Cambodia cotton, a variety which in southern India has proved superior to any American strain tried there; No. 34291, the *Ta ma* hemp from Hankow, China, a tall-growing variety that may interest Kentucky hemp growers; No. 34308, *Primula forrestii*, a new, fragrant, yellow primrose found in western Yunnan at altitudes of 9,000 to 11,000 feet; No. 34309, the ywapurú, a new plumlike fruit from Paraguay; No. 34330,

Baryxylum inerme, a new shade tree with showy yellow flowers, for trial near the shore in southern Florida, Porto Rico, and Panama; and No. 34339, one of the best flavored Hawaiian papayas, bearing flowers of both sexes on the same tree, to be used for grafting purposes in Florida.

Mr. S. C. Stuntz is responsible for the general form of the inventory and, under the supervision of the committee on scientific orthography of this Bureau, for the correctness of the nomenclature, while the identifications of the seeds and the notes on geographic distribution were furnished by Mr. H. C. Skeels, the data sent in by correspondents and travelers being assembled by Miss May Riley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., February 10, 1914.

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INVENTORY.

34093 and 34094.

From Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture, Manila. Received July 1, 1912.

Seeds of the following; quoted notes by Mr. Barrett:

34093. FLACOURTIA SEPIARIA Roxburgh. **Bitongol.**

"A small shrub bearing purplish, sweetish fruit about the size of a small cherry, edible."

Distribution.—Dry jungles along coasts in Bengal and Ceylon and eastward through the Malay Archipelago to the Philippines.

34094. PARKIA TIMORIANA (DC.) Merrill. **Cupang.**
(*P. roxburghii* Don.)

"A large, leguminous, ornamental forest tree, indigenous to the Philippines."

"This tree reaches a height of 35 to 40 meters and a diameter of 150 to 180 centimeters. The bole is 15 to 20 meters in length, strongly buttressed, but otherwise fairly regular. The crown, about one-half the height of the tree, is large, vase shaped, widespreading, and open. It is preeminently a tree of rather open and second-growth forests where the dry season is pronounced and is very scarce or entirely absent in those parts where a pronounced dry season is wanting. It prefers good soils and requires a great deal of light and therefore is found in the parang (patches of grass alternating with forest) or on the edges of untouched forests or in open places of dipterocarp forests. The bark is 6 to 12 millimeters in thickness, brown to russet brown in color, often gray where exposed to the sunlight. It has a roughened appearance due to shallow vertical broken lines and is covered with small, brown, corky pustules. The inner bark is dark brownish red in color. The leaves are alternate, doubly compound, large, and fernlike in appearance; the leaflets about 0.5 centimeter in length and whitish beneath. The tree is bare of leaves from one to six weeks during the dry season. The large sapwood is creamy white when fresh and then has a very disagreeable odor. On exposure it discolors rapidly. The heartwood is light brown but is found only in trees 60 centimeters or more in diameter. The wood is light and soft and decays rapidly. The wood is known as *cupang* and has the following uses: Light and temporary construction; packing boxes; wooden soles of shoes; matches. It is known to be good for paper pulp." (*H. N. Whitford, Forests of the Philippines, p. 39–40.*)

34095 and 34096. PERSEA AMERICANA Miller. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Quillota, Chile. Presented by Mr. M. Amacleo, Estacion de Patolojia Vejetal, Servicios de Policia Sanitaria Vejetal, Santiago, Chile. Received July 5, 1912.

Cuttings of the following:

34095. "*Fruto verde.*" **34096.** "*Fruto negro.*"

34097. MANGIFERA INDICA L. **Mango.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received August 25, 1911. Numbered July 3, 1912.

"*Caribe.* One side golden yellow to orange yellow, the other side scarlet. Nearly no fiber. Large, very good. Flesh orange yellow, peculiar flavor. Very beautiful and highly esteemed. Comes perfectly true from seed. For hot, rather dry regions." (*Wercklé.*)

See No. 30972 for previous introduction.

34098 and 34099. STIZOLOBIUM spp.

From Parakimedi Estate, Madras, India, through D. Hooper, esq., Office of Economic Botanist, Calcutta, India, at the request of Mr. C. V. Piper. Received June 24, 1912.

Seeds of the following; quoted notes by Mr. Piper:

34098. "*Dukka chikkudu* (Telugu). Seeds oblong, brown and gray marbled."

34099. "Seeds ashy gray, with a few black, cloudy splotches. Probably *S. cinereum.*"

34100. ANNONA RETICULATA L. **Custard-apple.**

From Tehuantepec, Mexico. Presented by Mr. W. W. Miller, Los Angeles, Cal. Received July 6, 1912.

34101. ERIOBOTRYA JAPONICA (Thunb.) Lindl. **Loquat.**

From Rome, Italy. Presented by Dr. Gustav Eisen, California Academy of Sciences, San Francisco, Cal. Received July 2, 1912.

"Seeds taken from fruit as large as average apricots and very fine in taste." (*Eisen.*)

34102 to 34104. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

From Alexandria, Egypt. Presented by Mr. D. S. Fish, secretary, Alexandria Horticultural Society. Received July 2, 1912.

Seeds of the following; quoted notes by Mr. Fish:

34102. *Lubia shami* (Syrian). Without eye spot.
34103. *Lubia shami* (Syrian). Brown eyed.
34104. *Lubia beladi* (Country). Black eyed.

34105. MEDICAGO RIGIDULA CINERASCENS (Jord.) Rouy & Fouc. **Alfalfa.**

From Kharput, Turkey. Presented by Mr. William W. Masterson, American consul. Received July 9, 1912.

34106. DOLICHOS LABLAB L. **Bonavist bean.**

From Pacasmayo, Peru. Presented by Mr. A. D. Selby, botanist, Ohio Agricultural Experiment Station, Wooster, Ohio, who procured it from Mr. B. H. Kauffman. Received July 8, 1912.

"Yuna bean. The sample received is mostly a white-seeded variety, but there is also a brown-seeded variety intermixed."

SUDAN GRASS (HOLCUS SORGHUM) AT THE CHICO FIELD STATION. (S. P. I. NO. 34114.)

Apparently the wild or half-domesticated form of our cultivated sorghums, crossing readily with them and entirely lacking the undesirable rootstocks of the ordinary Johnson grass, to which it is related. It promises to be a valuable fodder grass in California, Texas, and the Gulf States. Nine-tenths of an acre at Brownsville, Tex., planted March 5, mowed May 14, yielded hay weighing 7,080 pounds. (Photographed by McKee, July 1, 1913, Chico, Cal.)

BRANCH OF A SEEDLING CHINESE JUJUBE (ZIZIPHUS JUJUBA MILLER) WHICH HAS FRUITED IN TEXAS. NATURAL SIZE. (S. P. I. No. 22683.)

Seeds of the "Bottle jujube" were distributed in 1907. This fruit, from one of these seedlings, sent by Mr. F. T. Ramsey, of Austin, Tex., is the largest fruited variety yet in bearing in this country. The flesh is coarse, the skin tough, and the quality only fair. See S. P. I. 34162 for the description of a different variety. (Office photograph No. 10109, August 13, 1912.)

34109. PANICUM BARBINODE Trinius. **Para grass.**

From the Philippine Islands. Presented by Mr. Henry L. Hungerford. Grown at Stock Farm at Alabang, Rizal, near Manila. Received June 3, 1912.

"The seed came originally from Ceylon, where the grass is known as *Panicum muticum*. It closely resembles Para grass but does not seem to have equal forage value." (*C. V. Piper.*)

Distribution.—First described from Brazil; apparently generally distributed in the Tropics.

34110. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. **Barley.**

From China. Presented by Rev. Horace W. Houlding, South Chihli Mission, Tai Ming Fu, North China. Received November 13, 1911.

34111 and 34112. OPUNTIA spp. **Prickly pear.**

From C. Lerdo, Durango, Mexico. Presented by Dr. Elswood Chaffey. Received at the Plant Introduction Field Station, Chico, Cal., May 16, 1912. Numbered July 15, 1912.

Three cuttings of each of the following:

34111. OPUNTIA VILIS Rose.

Distribution.—On the footslopes and plains in the vicinity of Zacatecas in central Mexico.

34112. OPUNTIA AZUREA Rose.

Distribution.—The northeastern part of the Province of Zacatecas in central Mexico.

34113. GEVUINA AVELLANA Molina. **Avellano.**

From Maquehue, Temuco, Chile. Presented by Mr. D. S. Bullock, Lapeer, Mich. Received July 12, 1912.

A beautiful white-flowered proteaceous tree with large rust-colored leaves and coral-red fruit the size of a large cherry. The stone, or nut, is conical, and the kernel has somewhat the taste of hazelnuts; hence the name avellano.

See S. P. I. No. 19115 for previous introduction.

34114. HOLCUS SORGHUM L. **Sudan grass.**

(*Sorghum vulgare* Pers.)

From Khartum, Egypt. Presented by Mr. W. A. Davie, Inspector of Agriculture, for director, Department of Agriculture and Forests, Sudan Government. Received July 12, 1912.

"This is apparently identical with S. P. I. No. 25017. The plant is an annual, closely resembling ordinary Johnson grass in appearance but entirely lacking the rootstocks which make that plant undesirable. Sudan grass is apparently the wild or half domesticated form of our cultivated sorghums, and it crosses readily with the various varieties of sorghum. It has a stem much finer than Amber sorghum and slightly coarser than timothy." (*C. V. Piper.*)

For an illustration of Sudan grass growing at the Chico Field Station, see Plate I.

34116. MEDICAGO FALCATA L.

Collected in the vicinity of Semipalatinsk, Siberia. Purchased from Mr. G. T. Miroshnikov. Received July 11, 1912.

"This is seed of the ordinary 'Sholteek' and is imported for the special purpose of naturalizing this important wild forage plant in various sections of the Northwest,

especially on grazing lands in the Dakotas, Montana, Wyoming, Colorado, and Idaho. It thrives better in sod-grass regions than in bunch-grass sections. See also remarks made under No. 32389." (*Frank N. Meyer.*)

34117. LITCHI CHINENSIS Sonnerat. **Litchi.**

(*Nephelium litchi* Cambess.)

From Soochow, China. Presented by Mr. N. Gist Gee. Received July 15, 1912.

34118. IRIS TENUISSIMA Dykes. **Iris.**

From Pitt River region, Goose Valley, Shasta Co., Cal. Presented by Miss Alice Eastwood. Received July 17, 1912.

34119. ERIOBOTRYA JAPONICA (Thunb.) Lindl. **Loquat.**

From Rome, Italy. Presented by Dr. Gustav Eisen, California Academy of Sciences, San Francisco, Cal. Received July 16, 1912.

"This shipment contains seeds of both the pear-shaped and apple-shaped loquats of exceptional size, no fruit being less than 2 inches in diameter and some more. They are the best I have seen this year." (*Eisen.*)

34120 and 34121. ZEA MAYS L. **Corn.**

From Andahuaylas, Peru. Presented by Mr. W. Henry Robertson, American consul general, Callao, who procured this corn from Mr. Edward Sinclair, a former clerk in the consular office. Received July 16, 1912.

34120. White.

34121. Yellow.

"Mr. Sinclair states that the yellow is of a sweeter taste than the white, which is more farinaceous, both kinds, however, being highly valued here for culinary purposes. Its grain is unusually large." (*W. Henry Robertson.*)

34122. CLAVIJA ORNATA Don.

From Trinidad, British West Indies. Presented by Mr. P. Carmody, director, Department of Agriculture. Received July 16, 1912.

"An evergreen tree attaining a height of 10 to 12 feet, flowers orange colored; racemes drooping, 3 or 4 inches long; leaves long-lanceolate acute, spiny toothed; petioles 2½ inches long." (*Extract from Nicholson's Dictionary of Gardening.*)

Distribution.—The island of Trinidad and in the vicinity of Caracas in Venezuela.

34123. SCHEFFLERA ACTINOPHYLLA (Endl.) Harms. **Queensland umbrella tree.**

(*Brassaia actinophylla* Endl.)

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received July 19, 1912.

"This is best known as the Queensland umbrella tree, which is a truly descriptive term for the growth of the foliage. It grows 20 to 30 feet high and flowers on a terminal spike." (*James Pink.*)

"This araliaceous tree, known as "*Pinankaral*" to the natives of Queensland, has large leaves, set like umbrella ribs, at the top of the numerous stems. The wood is soft, close grained, and dark in color, and not durable." (*Maiden, Useful Native Plants.*)

Distribution.—The valley of Endeavor River and along the coast in Queensland, Australia.

34124. ANANAS SATIVUS Schult. f. **Pineapple.**

From Bowen Park, Brisbane, Queensland, Australia. Presented by Mr. William Soutter, secretary and manager, Queensland Acclimatization Society. Received July 17, 1912.

"Some interesting developments may be looked for with these seeds, as they are from a smooth *Cayenne* crossed with pollen from the *Ripley Queen*. The fruit, weighed with the top, turned the scales at 11 pounds. During the past 30 years I have raised upward of 30,000 plants from seed. These have been, for the greater part, discarded as useless. The selected types now number about a dozen, and these show constancy, and some possess high qualities. The smooth pineapple is an exceptionally shy seeder and responds tardily to pollination. Not so the roughs. They are readily pollinated and produce abundance of seed." (*Soutter.*)

34125. CALOPHYLLUM INOPHYLLUM L. **Mast wood.**

From Madras, India. Presented by Mr. José de Olivares, American consul. Received July 19, 1912.

"An evergreen tree which in some localities, especially when near the sea, attains a considerable size. It is indigenous throughout the western peninsula, Orissa, Ceylon, Burma, and the Andaman Islands and is distributed to the Malay Peninsula, Polynesia, Australia, and the islands of eastern Africa. There appears to be little doubt that the true gum tacamahaca, formerly attributed by some writers to *C. inophyllum*, is obtained neither from that nor from any other Indian tree. But when wounded, the stem, and also the fruits of the mast wood, exude a small quantity of bright-green, pleasantly scented resin, soluble in alcohol, which is not collected or made any use of at the present day. Rheede observes, however, that it is emetic and purgative, so that it would appear to have been formerly of medicinal value. From the seeds is expressed a greenish-colored oil known as pinnay or domba oil. According to some, the yield is as great as 60 per cent by weight, and the oil is said to congeal when cooled below 50 degrees. The seeds are collected twice a year—in August and again in February. The oil possesses a disagreeable odor and flavor, but is fairly extensively used for burning and is valued, especially in Polynesia, as an external application in rheumatic affections. The chief centers of production are Bombay, Goa, Travancore, Tinnevelli, Tanjore, Puri, etc. It is said to fetch a little more than half the price of coconut oil and is fairly extensively exported from India to Burma. The timber is moderately hard and close grained and by Sebert (Les Bois de la Nouvelle Caledonia) is believed to be magnificent for cabinet work. All the species, and in particular the poon spar, *C. tomentosum*, are highly serviceable for masts, spars, railway sleepers, machinery, etc., but for these purposes are much less in demand than formerly." (*Sir George Watt, Commercial Products of India.*)

34126. TRITICUM AESTIVUM L. **Wheat.**
(*T. vulgare* Vill.)

From La Guayra, Venezuela. Presented by Mr. Thomas W. Voetter, American consul. Received July 23, 1912.

"The grower of this wheat stated that it came to Venezuela originally from the Canary Islands and that it has been found to be the best variety known here to resist dry weather. The sample sent was from a field that was not irrigated and received no rainfall from the time of sowing until harvested. The name of the variety was not known to the grower." (*Voetter.*)

34127 to 34129.

From Soochow, China. Presented by Mr. N. Gist Gee. Received July 22, 1912. Seeds of the following; quoted notes by Mr. Gee:

34127. HORDEUM VULGARE L. **Barley.**

"Used to make a sirup."

34128. TRITICUM AESTIVUM L. **Wheat.**
(*T. vulgare* Vill.)

"Used to make flour."

34129. HORDEUM VULGARE L. **Barley.**

"Eaten as rice is by the Chinese."

34130. CASTILLA ELASTICA Cerv. **Central American rubber.**

From Misantla, Vera Cruz, Mexico. Presented by Mr. C. A. Purpus. Received July 19, 1912.

34131. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

From Guadeloupe, French West Indies. Presented by Mrs. F. T. F. Du Mont. Received July 25, 1912.

"In Florida there is a peach which ripens in May and which is locally called the 'pinto [peento] peach.' I have never seen this peach below Rockledge. There is a peach here that is very like it in shape and taste that grows and bears well and stands the heat. Its shape is long, with a decided point at the apex. The stems are slightly indented in the fruit. The fruit is easily detached when ripe. The pulp is juicy, homogeneous, and not stringy. It has more perfume and savor than the Florida peach. It is a freestone and peels easily. It is larger that the Florida peach, the long diameter averaging 1½ inches, the transverse 1½ inches. It is round—not flattened. It resists decay well, even in this heat, from 76 degrees, our coolest nights, to 90 degrees always in the afternoons, some of the fruit lasting after being gathered for four days. It seems to me this peach would do well in southern Florida. The stones I am sending were taken from the fruit between July 9 and 14." (*Mrs. Du Mont.*)

34132 to 34145.

From Novospassko, Syzran-Riazan R. R., Russia. Presented by Mr. A. D. Woeikov. Received July 24, 1912.

Seeds of the following:

34132. SORBUS TIANSCHANICA Ruprecht. **Mountain ash.**
(*Pyrus tianschanica* Franch.)

"A rowan occurring in the higher mountain regions of central Asia. Generally of shrubby growth, though occasionally found to be a small tree. Of value as an ornamental garden and park tree for the cool, semiarid sections of the United States." (*F. N. Meyer.*)

34133. ASPARAGUS TRICHOPHYLLUS Bunge. **Asparagus.**

"An asparagus of twining habits found in sandy and alkaline deserts in central Asia. Of value, possibly, in breeding work." (*F. N. Meyer.*)

34134. PRUNUS SIBIRICA L. **Plum.**

"A species of Prunus, closely related to the apricots, occurring in eastern Siberia, Manchuria, and Mongolia. May be of value in breeding experiments." (*F. N. Meyer.*)

34132 to 34145—Continued.

34135. CRATAEGUS sp. **Hawthorn.**

"A haw occurring on stony places along water courses in central Asia. May be of value as a stock for pears in the drier sections of the United States." (*F. N. Meyer.*)

34136. CRATAEGUS sp. **Hawthorn.**

"*Dolana.*"

34137. ACER GINNALA SEMENOVII (Reg. and Herd.) Pax. **Maple.**

"A maple of shrubby growth, generally found on dry, rocky places in central Asia. Of value as an ornamental tall shrub or small tree in the drier parts of the United States." (*F. N. Meyer.*)

34138. ROSA sp. **Rose.**

"*Flor. roseis.*"

34139. ROSA sp. **Rose.**

"*Jt Murut.*"

34140. JUNIPERUS PSEUDOSABINA Fischer and Meyer. **Juniper.**

"'*Haz artsha.*' A juniper growing on very dry, sun-burned mountain slopes in Russian Turkestan. Much sought after as fuel. May be valuable for afforestation purposes in the arid and semiarid sections of the United States." (*F. N. Meyer.*)

34141. JUNIPERUS COMMUNIS OBLONGA (Bieb.) Loudon. **Juniper.**

Distribution.—A form of juniper with longer leaves and smaller oblong fruits found in the trans-Caucasian region of southeastern Russia.

34142. JUNIPERUS sp. **Juniper.**

"*Saur artsha.*"

34143. JUNIPERUS sp. **Juniper.**

34144. JUNIPERUS sp. **Juniper.**

"*Kara artsha.*"

34145. JUNIPERUS sp. **Juniper.**

"*Sary artsha.*"

34147 to 34151. MEDICAGO spp.

From Jerusalem, Palestine. Presented by Mr. E. F. Beaumont. Received July 19, 1912.

Seeds of the following:

34147. MEDICAGO CORONATA (L.) Gaertn.

"I am very much impressed with the very hardy character of this. It is found in all localities and especially on rocky mountain sides where the soil is only a few inches deep on the rock. This year the later rains were practically a failure, a fact which further shows its drought-resisting qualities. Although its seeds are small, it reseeds with ease." (*Beaumont.*)

34148. MEDICAGO RUGOSA Desr.

Distribution.—The countries bordering on the Mediterranean from Spain through Italy and Greece to Asia Minor and Syria, and in northern Africa.

34149. MEDICAGO MARINA L.

34150. MEDICAGO MINIMA (L.) Grufb.

34151. MEDICAGO ROTATA Boiss.

34152. ILEX PARAGUARIENSIS St. Hil. **Yerba maté.**

From Buenos Aires, Argentina. Presented by Mr. C. F. Mead, Caballero, Paraguay. Received July 16, 1912.

See No. 29097 for previous introduction and description.

34153. CARISSA OVATA R. Brown.

From Sydney, New South Wales. Presented by Mr. J. H. Maiden, Botanic Gardens. Received July 30, 1912.

"Warialda, New South Wales. Growing at the foot of hills of a volcanic nature, subjected to periodical droughts, early flowering and late in fruiting. Fruits small, owing to the very extreme drought during the past two years." (*John Luke Boorman, collector.*)

"This little bush produces a very pleasant fruit, which is both agreeable and wholesome. It is like a sloe, egg-shaped, and about half an inch long. It exudes a viscid, milky juice and contains a few woody seeds. 'I can testify that the fruit is both agreeable and wholesome, and I never knew an instance of any evil consequences, even when they were partaken of most abundantly.' (*Tenison-Woods.*)" (*Maiden, Useful Native Plants.*)

34154 and 34155. IPOMOEA BATATAS (L.) Poir. **Sweet potato.**

From Auckland, New Zealand. Presented by A. Yates & Co. Received July 31, 1912.

One tuber of each of the following:

34154. Red skin. **34155.** White skin.

"Varieties of South Sea Island sweet potatoes." (*Yates & Co.*)

34156. OMPHALEA sp. (?)

From Bocono, Colombia, South America. Presented by Mr. W. O. Wolcott, Brooklyn, N. Y. Received July 26, 1912.

"I can give you no definite information about these nuts except what the natives told me, as I bought them in the town at the foot of the mountains and did not see the trees. The natives told me they grew high up in the mountains where it is quite cold—but not freezing—probably 7,000 to 8,000 feet or more, as Bocono, where I got them, is about 5,000 feet. They say the trees grow very large, 12 to 18 inches in diameter and 50 to 60 feet high, and are very prolific in nuts. They call the nuts by two names—*nueces* (nuts) and *pan del pobre* (poor people's bread). I have traveled for the last 20 years all over Venezuela and Colombia and have never seen them except at this one place. It rains a good deal in those mountains for about six months of the year, from April to September or October, the rest of the year being dry. I got these last March, just at the end of the season. I should judge they would make fine stock feed in meal; in fact, the natives eat them, and they told me they fatten their hogs on them finely, as the shells are thin and very brittle. The meats appear to have much oil. I find them rather hard when dry. When I got them the meats were softer than chestnuts when first gathered." (*Wolcott.*)

34157. PERSEA LINGUE (Ruiz and Pav.) Nees. **Lingue.**

From Santa Ines, Chile. Presented by Mr. Salvador Izquierdo. Received August 31, 1911. Numbered August 1, 1912.

"The bark of the lingue is used on a large scale for tanning leather, and the leaves are poisonous to animals. As a medicine, the bark is a powerful astringent and was formerly exported in considerable quantities." (*Espinoza, Plantas Medicinales de Chile.*)

See No. 24208 for previous introduction.

34158 to 34160.

From Honolulu, Hawaii. Presented by Dr. E. V. Wilcox, Hawaii Agricultural Experiment Station. Received August 2, 1912.

34158. DIOSCOREA SATIVA L. **Yam.**

34159. DIOSCOREA PENTAPHYLLA L. **Yam.**

34160. SMILAX SANDWICENSIS Kunth. **Uhi.**

"A tall, slender climber with a woody, unarmed stem and tuberous rhizomes which are eaten by the Hawaiians in times of scarcity."

34161. STRYCHNOS GERRARDI N. E. Brown. Quaqua.

From Province of Mozambique, Portuguese East Africa. Presented by the Inspector of Agriculture. Received August 5, 1912.

"A small tree, 3 to 10 meters high, without thorns and with exceedingly variable leaves. Fruit one celled, globose, 5 to 7 centimeters in diameter, glaucous, glabrous, often spotted, with a hard shell and numerous flat seeds lying in acidulous, edible pulp. Abundant from Natal to Inhambane, especially on the sandy soils." (*Sim, Forest Flora of Portuguese East Africa.*)

34162. ZIZIPHUS JUJUBA Miller. Jujube.

(*Z. sativa* Gaertn.)

From Washington, D. C. Presented by Mr. Leslie Reynolds, superintendent, U. S. Botanic Garden, Washington, D. C., through Mr. Frank N. Meyer. Received August 2, 1912.

"A large-fruited variety of the jujube found growing in the United States Botanic Garden. Has successfully withstood severe freezes." (*F. N. Meyer.*)

For an illustration of a seedling Chinese jujube which has fruited in Texas, see Plate II.

34163 to 34179.

From Durban, Natal. Presented by Dr. J. Medley Wood, Durban Botanical Gardens. Received July 29, 1912.

Seeds of the following:

34163. ANTIDESMA BIFRONS Tulasne.
(*A. venosum* Meyer.)

"A euphorbiaceous shrub or small tree 5 to 15 feet in height, having a wide distribution through central East and West Africa. The smooth, dark-red fruit, one-half inch long or less, is eaten by natives and children. It is not very palatable and probably might be injurious if eaten in quantity." (*Sim, Forest Flora of Cape Colony.*)

34164. BAPHIA RACEMOSA (Hochst.) Baker. **Violet pea.**

"An erect shrub or small-branched tree with ascending branches from Natal. It is easily distinguished from all leguminous Cape shrubs in having simple, unifoliate, ovate-lanceolate leaves. It has ornamental, white, strongly violet-scented flowers with an orange spot at the base of the standard and is known in Natal as the violet pea. Wood too small to be used for timber but, if cut in winter, peeled at once, and seasoned, makes good implement handles." (*Sim, Forest Flora of Cape Colony.*)

34163 to 34179—Continued.

34165. CAPPARIS CITRIFOLIA Lamarck.

"A straggling shrub 5 to 8 feet high or with climbing branches where protected. Abundant in eastern Cape Colony and also in Natal. Decoction of the roots used in local and native medicine." (*Sim, Forest Flora of Cape Colony.*)

34166. CARISSA GRANDIFLORA (E. Meyer) DC. **Amatungulu.**

34167. WARNERIA THUNBERGIA (L. f.) Stuntz.

(*Gardenia thunbergia* L. f., Supplementum Plantarum Systematis Vegetabilium, p. 162, 1781.)

Seeds of this white-flowered rubiaceous shrub were received under the name *Gardenia thunbergia* L. f. In publishing this name, the younger Linnæus cited *Thunbergia capensis* Montin (Kongl. Vetensk. Acad. Handl. Stockholm, vol. 34, p. 288, pl. 11, 1773). Montin, however, merely characterized the genus Thunbergia, with neither binomial nor citations. The specific name given by Linnæus filius is therefore the earliest and should be adopted. The reason for using the generic name Warneria for the plants usually referred to the genus Gardenia is explained under *Warneria augusta* Stickman, S. P. I. No. 30498, in Bulletin No. 242, Bureau of Plant Industry, p. 14, 1912.

"A small, much-branched tree, 8 to 15 feet high, with a smooth, white, unarmed stem up to 9 inches in diameter. Leaves very variable. Flowers terminal, solitary, strongly scented, large, white, and attractive. Fruit woody, very hard, oval or oblong, 2 to 4 inches long, 2 inches in diameter, many seeded, remaining on the trees for several years, increasing in size with age, and, finally, either smooth or roughened, but usually white. The strongly scented white flower makes this a favorite garden flowering tree, and it is also used as a stock for grafting the double *Gardenia florida* (*Warneria augusta* Stickman) upon. The wood is hard, heavy, and strong, and used for making tools, etc." (*Sim, Forest Flora of Cape Colony.*)

34168. IPOMOEA ALBIVENIA (Lindl.) Sweet.

Distribution.—A perennial shrubby climber with large white flowers, found in the Kalahari region of South Africa and in Natal.

34169. TRICALYSIA FLORIBUNDA (Harvey) Stuntz.

(*Kraussia floribunda* Harvey, Hooker's Journal of Botany, vol. 1, p. 21, January, 1842.)

(*Coffea kraussiana* Hochstetter, Flora, vol. 25, p. 237, April, 1842.)

(*Tricalysia kraussiana* (Hochst.) Schinz, Mem. Herb. Boiss., vol. 10, p. 67, 1900.)

Seeds of this rubiaceous shrub from Natal were received under the name *Kraussia floribunda* Harvey. This name, published in January, 1842, was based on Krauss's No. 121, which was also the type of *Coffea kraussiana* Hochstetter, published in April, 1842. As the plant is now considered to belong to the genus Tricalysia and the combination *Tricalysia floribunda* seems never to have been published, it is necessary to adopt it now.

"Small tree up to 20 feet in height and 1 foot in diameter, with fluted stem. Leaves evergreen. Fruit a small, black berry. Wood heavy, hard, not used." (*Sim, Forest Flora of Cape Colony.*)

34170. MABA NATALENSIS Harvey.

"A tree 20 to 50 feet high, with horizontal, densely foliaged branches. Fruit one-half inch in length, acorn shaped in the green calyx cup, yellow when ripe, rather succulent, though hardly edible. Frequent on the coast through Natal. Usually on the sand dunes or behind them. Rarely large enough for use." (*Sim, Forest Flora of Cape Colony.*)

34163 to 34179—Continued.

34171. PTERYGOCARPUS FLORIBUNDUS (Meyer) Stuntz.
(*Dregea floribunda* Meyer, Commentariorum de Plantis Africae Australioris, vol. 1, fasc. 2, p. 199, 1837.)

Seeds of this asclepiadaceous plant from South Africa were received under the name *Dregea floribunda* Meyer. The generic name Dregea had, however, been used by Ecklon and Zeyher in June, 1836 (Enumeratio Plantarum Africae Australiae Extratropicae, p. 350) for certain umbelliferous plants now considered to belong to Peucedanum. It is therefore necessary to adopt the generic name Pterygocarpus, published by Hochstetter in 1843 (Flora, vol. 26, bd. 1, p. 78). The type species of Hochstetter's genus is *P. abyssinicus*, a plant congeneric with *P. floribundus*.

34172. ONCOBA KRAUSSIANA (Hochst.) Planchon.

Distribution.—A much-branched shrub with large white flowers found in the woods in the vicinity of Durban, in Natal, South Africa.

34173. OSTEOSPERMUM MONILIFERUM L.

Distribution.—A diffuse shrub with bright-yellow flowers found along the coast of South Africa from Natal to Cape Colony.

34174. OXYANTHUS PYRIFORMIS (Hochst.) Skeels.
(*O. natalensis* Sond.)

See S. P. I. No. 31856 for previous introduction.

34175. PAVETTA REVOLUTA Hochst.

"A large shrub or small tree, smooth, free flowering, and apparently confined to the coast. On the coast dunes from Port Elizabeth to Natal, scarce, and of no economic use." (*Sim, Forest Flora of Cape Colony.*)

Introduced for use as an ornamental in Florida.

34176. PSYCHOTRIA CAPENSIS (Eckl.) Vatke.

"Usually a shrub, sometimes a tree, up to 10 to 15 feet high, with 3 to 6 inches stem diameter, and with crooked and forked timber. A common Natal shrub of no economic use." (*Sim, Forest Flora of Cape Colony.*)

Introduced for use as an ornamental in Florida.

34177. BOSCIA UNDULATA Thunberg. **White ironwood.**
(*Toddalia lanceolata* Lam.)

"A large evergreen tree, often 2 to 5 feet in diameter, with a clean, tall stem in high forests; frequent also as a bush or small, spreading tree in scrub forests. Flowers from September to December, according to locality and season; fruit ripens in autumn; 8,000 dry fruits weigh 1 pound and contain about 30,000 seeds. The seeds germinate easily, and the cultivation of the tree is simple. Timber white, close grained, tough, hard, and heavy. Usually to be had sound in the mountain forests up to 2 feet diameter and with 10 to 20 rings to the inch. Used mostly by wagon makers. In toughness, it is the ash of the South African forests." (*Sim, Forest Flora of Cape Colony.*)

34178. TURRAEA OBTUSIFOLIA Hochst.

"A free-flowering shrub, 3 to 5 feet high, common on the dunes along the coast of Cape Colony and Natal. It is never large enough to be of economic value further than its use in holding fully exposed sea dunes; its showy flowers and seeds make it worth cultivation where it will grow. Flowers during early summer, fruits in autumn." (*Sim, Forest Flora of Cape Colony.*)

34179. TURRAEA HETEROPHYLLA Smith.

See 31863 for previous introduction.

34180. MALUS sp. **Crab apple.**
(*Pyrus* sp.)

From Jamaica Plain, Mass. Presented by Mr. Charles W. Livermore, Brookline, Mass. Received August 7, 1912.

See No. 32360 for previous introduction and description.

34181. MICROCOS LATERIFLORA L.
(*Grewia asiatica* L., Mantissa, p. 122, 1767.)

From Saff, Egypt. Presented by Mr. Alfred Bircher, The Middle Egypt Botanic Gardens. Received August 6, 1912.

Seeds of this yellow-flowered tiliaceous shrub from India were received under the name *Grewia asiatica*. The generic names Microcos and Grewia, which are recognized as congeneric, were both published in Species Plantarum, 1753, Microcos on page 514 and Grewia on page 964. Microcos having priority of publication, it is necessary to adopt it. The present species was published by Linnæus as *Grewia asiatica* in 1767, but had been previously published (Species Plantarum, p. 514, 1753) as *Microcos lateriflora*, which name it is necessary to use here.

34182. STIZOLOBIUM CINEREUM Piper and Tracy.

From Baitul, Central Provinces, India. Presented by D. Hooper, esq., Office of Economic Botanist, Botanical Survey of India Department. Received August 6, 1912.

"Locally called 'dadaball.'" (*Hooper.*)

34183. PISUM ARVENSE L. **Pea.**

From Khotan, Chinese Turkestan. Received through Mr. Frank N. Meyer, agricultural explorer for this Department, September 11, 1911. Numbered August 9, 1912.

Brownish black seeds. Picked out of S. P. I. No. 31806. See that number for remarks.

34184 to 34194. GOSSYPIUM spp. **Cotton.**

From Manila, Philippine Islands. Presented by Mr. M. M. Saleeby, Bureau of Agriculture. Received July 13, 1912.

"These seeds were collected and briefly described by several of our field men stationed in the above provinces, and the following is a description of each species or type as given by them." (*Saleeby.*)

34184. GOSSYPIUM ARBOREUM L.

"*Gapas Kinachila.* Locality, southern part of Cebu, principally in the towns of Oslob, Buljo-on, and Dalaguete. This species is planted usually as a garden or dooryard crop throughout the greater part of the province. It is grown to a greater extent in the towns mentioned above, where the fiber is used for spinning and for the weaving of cloth by primitive wooden looms. It is supposed to have been introduced by the Spaniards, but when and by whom it was introduced could not be determined. Several of the natives claim that it was introduced from China, but no definite proof is given to sustain this claim. It has been grown for at least several generations. The name, translated into English, means 'Spanish cotton.' Full-grown plants average about 2 meters in height, while isolated plants sometimes reach the height of 3½ meters. The flowers are white. On the inside of the corolla, extending from the base halfway up to the tips, the petals are purple. There are no distinct purple spots at the base of the petals, but there is a purple coloration at the base of the outside of the petals, gradually fading into white."

34184 to 34194—Continued.

34185. GOSSYPIUM HIRSUTUM L.

"*Gapas Sanglay.* Locality, Cebu. This is one of the brown cottons of the Philippines. It is planted to a very limited extent as a garden or dooryard plant. It is supposed to have been introduced by the Spaniards, but the origin and time of its introduction could not be determined. The word 'gapas' means 'cotton' and 'sanglay' means 'mixed' or 'mixed breed' and corresponds to the Spanish word 'mestizo.' The fiber is used to a very limited extent for spinning. The leaves and immature bolls are sometimes used by the natives as a medicine for the treatment of fever. The plant averages about 1½ meters in height. The flowers are yellow, and there are no purple spots at the base of the petals."

34186. GOSSYPIUM sp.

"*Toguillo.* This is apparently the kidney cotton, or *Gossypium brasiliense.* Locality, Iloilo Province. The isolated plants are found widely distributed in Panay and other islands of the archipelago. Formerly the lint was used in several districts in Iloilo Province for weaving purposes, but since the introduction of the *Taal* species it has been almost replaced by the latter. The original as well as other data relating to its introduction could not be determined. The oldest natives declare that to their definite knowledge it has been grown in Panay for more than 40 or 50 years. How much longer before that it had been planted is only a matter of conjecture. In Iloilo it is known as 'Toguillo,' 'Guillo,' or 'Visaya.' In two or three instances the fiber of this cotton is grown for commercial purposes. In some localities it is used for making fish nets, its supposed superior strength making it more valuable than the *Taal* for that purpose. It is generally grown as a perennial shrub that attains the height of 4 to 5 meters if allowed to follow its natural habit. The leaves are 4 or 5 lobed, usually the latter, and measure 10 to 22 centimeters in diameter. The bolls are longer and narrower than those of the *Taal*, measuring 4 to 5 centimeters by 2.5 to 3 centimeters. The seeds are black and quite free from fuzz, five to nine being developed in each valve. The fiber is finer, longer, and stronger than that of the *Taal.* The flowers are yellow, with red spots at the bases of the petals. The fiber is about 3 centimeters in length. Several samples of it have lately been forwarded to firms in the United States, and the reports received were very favorable. The demand for this cotton is almost unlimited, and the price quoted was 20 cents per pound and will constantly remain 4 to 6 cents per pound above that of the middling Upland."

34187. GOSSYPIUM HIRSUTUM L.

"*Taal.* This species was introduced into Panay about 15 years ago from the region around Taal Mountain, in Batangas Province; hence the significance of the local name. Practically speaking, this cotton is the only one grown here commercially or with any attempt at systematic planting. It is usually cultivated alternately with rice; for this, and the further fact that it is a more heavy producer of lint, its cultivation has been gradually superseding that of *Toguillo.* It is planted as a field crop in the towns of Guimbal and Miagao, of Iloilo Province, and the towns of Bugason and Valderama, of Antique Province. Its origin could not be ascertained. It is probably the same as the 'Bulac Damo,' of Batangas. A few years back the production and spinning of this kind of cotton, and also the weaving of cotton cloth from it, constituted the chief household industry of Panay. The quantities of cloth and blankets manufactured from it were, it is said, in excess of the local consumption. The introduction of the Chinese cotton yarn and cloth by the Chinese merchants during recent years has resulted in a considerable decline in the production of this and other cottons, and to-day imported Chinese cloth

34184 to 34194—Continued.

and blankets have largely superseded the stronger homemade articles. The plants attain the height of 0.8 meter to 1½ meters. The flowers are white to pink in color, and there are no color spots at the bases of the petals. The leaves are either 3 to 5 lobed, usually the former, measure 6 to 12 centimeters in diameter, and produce a pubescence on their under surfaces. The bolls are nearly spherical, averaging 4 centimeters in diameter. The prevailing number of valves per boll is four, though three to five are common. The seeds are brown and covered with fuzz. The lint measures about 2½ centimeters in length."

34188. GOSSYPIUM HIRSUTUM L.

"*Candava.* Our field man in Panay described this as being a variety of the *Taal* species mentioned above. (S. P. I. No. 34187.) He was led to this belief by the fact that the plants are apparently identical, with no difference whatever except in the color of the lint. I have not seen the plant producing this brown lint, but am inclined to think it is a separate species. The cultivation is very limited, and the production of the fiber is estimated at not more than 1 per cent of that of *Taal.*" (*Saleeby.*)

34189. GOSSYPIUM sp.

"*Gapas.* Locality, Tacloban, Leyte Province. The name means 'cotton.' It is planted merely as a garden or dooryard plant. It was introduced into Leyte Province either from Batangas or Ilocos Norte. Its fiber is used to a very limited extent for spinning. No articles of importance are made from it. The plants range from 1⅓ to 2½ meters in height. The flowers are yellow, and there are also purple spots at the bases of the petals. A specimen was turned over to Mr. Merrill, our botanist, for identification. He has not given a final report on it, but believes it is *Gossypium nankin.*"

34190. GOSSYPIUM sp.

"*Bulac Damo.* Our field man has not sent his report regarding this variety. Judging from the lint and seed, however, I am inclined to think it is the same as the *Taal* species of Panay." (*Saleeby.*)

34191. GOSSYPIUM HIRSUTUM L.

"This cotton is similar to *Gapas Sanglay* (S. P. I. No. 34185). The description applies to this variety in every respect, except that in the latter the leaves and bolls are slightly larger than the former. Only two plants of this variety were found, which were grown in a low and rather damp place. This variety may be the same as the regular *Gapas Sanglay* (S. P. I. No. 34185), and the large size of the bolls and leaves may be due to a more fertile soil with sufficient moisture. Locality, Cebu Province."

34192. GOSSYPIUM sp.

"*Bulac Saot-Bayo.* A kind of cotton from Batangas Province, regarding which we have no information."

34193. GOSSYPIUM sp.

"*Bulac-Cahoz.* This is apparently the same as the *Toguillo* cotton of Iloilo (S. P. I. No. 34186). The word 'cahoz' means tree, and in this case refers to the fact that this species is grown as a perennial crop."

34194. GOSSYPIUM HIRSUTUM L.

"*Bulac Saot-Pula.* From Batangas Province. This is probably the same as the *Candava* variety (S. P. I. No. 34188) of the *Taal* cotton of Iloilo. The name 'Taal' indicates that the Iloilo species must have been introduced from the region around Taal Mountain, in Batangas Province."

34195 to 34197. TRIFOLIUM spp. **Clover.**

Grown in the United States Department of Agriculture greenhouses at Washington, D. C., by Mr. G. W. Oliver, who collected the original seed in Algeria. Numbered August 9, 1912.

Seeds of the following; quoted notes by Mr. Oliver:

34195. TRIFOLIUM sp.

(Oliver No. 3.) "Makes a low growth, but abundant; seems to be annual."

34196. TRIFOLIUM ANGUSTIFOLIUM L.

(Oliver No. 13.) "Grows rapidly, annual, about 15 inches high."

34197. TRIFOLIUM PROCUMBENS L.

(Oliver No. 28.) "Very tall form."

34199 to 34208.

From Port Louis, Mauritius. Purchased from the Department of Forests and Gardens, through Mr. G. Regnard. Received August 5, 1912.

Plants of the following:

34199 to 34205. MANGIFERA INDICA L. **Mango.**

34199 to 34201. Grafted plants.

34199. *Augusta.*

34200. *Jose.*

34201. *Aristide.*

34202 to 34205. Not grafted, but keeping the qualities of the species.

34202. *Torse.*

34203. *Figet.*

34204. *Maison Rouge.*

34205. *Dauphine.*

34206. DIMOCARPUS LONGAN Lour. **Longan.**
(*Nephelium longana* Cambess.)

"Fruit small and spherical, the size of a hazelnut, smoother than the litchi, reddish, rosy, or yellow. Pulp relatively thin, translucent, very juicy, sweet, with a characteristic taste of ether. The name dragon's-eye given to this species is due to the black spot which the seed bears at the hilum." (*Capus and Bois, Produits coloniaux.*)

34207. PIMENTA ACRIS (Swartz) Kostel. **Bayberry.**

34208. PIMENTA OFFICINALIS Lindley. **Allspice.**

Distribution.—The allspice tree, found in southern Mexico and southward throughout tropical America and in the West Indies. Cultivated in the Tropics of the Old World.

34209 and 34210.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Muséo Nacional. Received August 10, 1912.

Cuttings of the following:

34209. SAPIUM UTILE Preuss.

34210. SPONDIAS sp. **Sismoyo.**

"*Sismoyo.* Small tree, common in hedgerows and propagated by cuttings. The fruit of the typical variety is small, oval, reddish yellow in color, and of acid taste. The jocote, jocote tronador, and sismoyo seem to be cultivated races of the same species." (*Pittier, Plantas Usuales de Costa Rica.*)

34211. AMYGDALUS PERSICA L. **Peach.**

(*Prunus persica* Stokes.)

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received August 12, 1912.

"Small hardy peach." (*Gee.*)

34212 and 34213.

From Algiers, Algeria. Presented by Dr. L. Trabut, director, Service Botanique. Received August 12, 1912.

34212. PISTACIA ATLANTICA Desf. **Betoom.**

"This round-topped tree, which grows only singly and not in forests, is characteristic of the high plateaus of the Atlas Mountains. The fruits are gathered for use by the Arabs." (*Martins; Von Spitzbergen zur Sahara.*)

34213. PHOENIX DACTYLIFERA L. **Date.**

"*Medjhool.* This date comes from the Tafilelt (also written Tafilet and Tafilalet) region in southeastern Morocco. It is the finest variety in the Tafilelt country, but is unknown in America and comparatively little known in Europe, except in England and Spain, in both of which countries it brings a higher price than any other date on the market in spite of the fact that it is almost never put up in attractive form but is sold in bulk. Dates of this variety can be found in practically every grocery in Spain, where they are known as 'Datiles de Berbería.'

"The fruit is large, from 2 to 2½ inches long and from three-fourths to 1 inch thick. It is semitranslucent, dark brown in color, and has flesh rather firm in texture and of a most delicious flavor. It is much darker in color than the Deglet Noor variety and keeps much better. The dates always have the calyx (zentfa) attached to the stem end.

"The four offshoots comprised under this number were secured for Dr. L. Trabut by Si Mohammed ben Idris Fassi in the Er Reteb region, that part of Tafilelt said to produce the best quality of this well-known date, which has made the whole Tafilelt country famous.

"This gift from the Service Botanique of the Algerian Government to the Department of Agriculture marks an epoch in American date culture. These selected offshoots from the best locality in Tafilelt will not only show how this famous variety succeeds in the New World deserts, but will also make it possible to determine how truly it has been reproduced by the seedlings, some thousands of which are already growing in California." (*W. T. Swingle.*)

For an illustration of the Medjhool date, natural size, see Plate III.

34214 to 34216.

From Tientsin, China. Presented by Dr. Yamei Kin. Received August 10, 1912. Seeds of the following; quoted notes by Dr. Kin.

34214 and 34215. ZEA MAYS L. **Corn.**

34214. "This is the northern Chinese corn which is of the waxy-endosperm kind, though perhaps somewhat different from the kind (S. P. I. No. 34053) I sent before."

34215. "This species of the above corn had become mixed with some foreign corn and shows it clearly. The Chinese say that the foreign corn grows less cob and a given area producing corn will give more grain per bushel measure, but when milled to take off the outer skin of the kernel, which it seems they do before eating it, the foreign corn has so much thicker skin that a given lot of corn does not give as much meal as the Chinese."

THE MEDJHOOL DATE, FROM THE TAFILELT REGION, MOROCCO. NATURAL SIZE. (S. P. I. No. 18630.)

This is a dark-colored variety of very unusual size and good flavor. It is exported to Spain and England, but is unknown in American markets. S. P. I. No. 34213 consists of four offshoots of this variety presented by the Service Botanique of the Algerian Government, especially secured by Dr. L. Trabut, director of that service and collaborator of the Office of Foreign Seed and Plant Introduction. (Office photograph No. 1826, May 28, 1906.)

A TIENTSIN VARIETY OF PAI TS'AI, OR CHINESE CABBAGE (BRASSICA PEKINENSIS (LOUR.) SKEELS). (S. P. I. NO 34216.)

This variety has been tested for several seasons in various parts of America and has proved to be a promising late vegetable. It makes a very rapid fall growth, can be planted after the summer vegetables are harvested or about the time turnips are sown, and makes a long, narrow head before freezing weather. (Photographed by Crandall, No. 13540, December, 1913, Chevy Chase, Md.)

34214 to 34216—Continued.

34216. BRASSICA PEKINENSIS (Lour.) Skeels. **Pai ts'ai.**

"Fine Chinese cabbage seed. The people here plant thinly, either in rows, and then pull up the weak sprouts, or scatter over a space and then transplant. The latter method is said to yield the best plants, though for a while the young shoots appear to suffer; yet when the autumn weather comes on and they are well manured the transplanted shoots will make better growth. The plants must be manured heavily when about 8 or 10 inches high—not sooner, or they will burn out, as they say, and not later, or they will not make the growth before cold weather sets in. To get the extra-fine close heads, tie up the leaves when they are pretty well grown, so that the leaves which are loose and long will not fall away from the center and become frost-bitten. The plants should be planted not less than 2 feet apart, in rows that have at least 3 feet space between, as the cabbages need a good deal of room. When well grown, the average plant will weigh, after being trimmed for the market, about 8 or 9 catties; nearly 2 feet long, mostly crisp white stem, and but little green leaf. I do not know how much nourishment there may be in it, but it is the main staple of the diet of the people here in the north during the winter. With plenty of coarse whole-wheat flour, maize, and cabbage, the people make a good growth certainly here."

For an illustration of a field of Chinese cabbage as grown at Chevy Chase, Md., see Plate IV.

34217 and 34218.

From McCale Sana, Lumbwa, British East Africa. Presented by Mrs. Ernest Smith. Received August 12, 1912.

Seeds of the following:

34217. (Undetermined.)

"Wild coffee."

34218. PHOENIX sp.

"These wild dates are all growing on the river banks; some are growing in the river itself. I fancy this is how they have managed to survive, as the Lumbwa natives have been most destructive with grass fires and burning out everything, and when they wanted a new piece of ground to cultivate they would set fire to the forest as the easiest way of clearing the ground they wanted to use." (*Smith.*)

34219. HYPHAENE THEBAICA (L.) Martius. **Doum palm.**

From Hamburg, Germany. Presented by Mr. Robert P. Skinner, American consul general. Received August 7, 1912.

Seeds imported through the German importers, who purchase them for use in button making, in order to determine the possibility of securing large quantities of good quality doum-palm seeds for planting purposes. Immense quantities of seeds are imported through Hamburg to supply the button manufacturers of Germany with a cheap substitute for the vegetable ivory produced by the nuts of Phytelephas species.

34220 to 34249. ORYZA SATIVA L. **Rice.**

From Manila, Philippine Islands. Presented by Mr. F. W. Taylor, Director of Agriculture, through Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received August 10, 1912.

"The yield of these rices varies from 5,000 kilos per hectare down to 3,800 kilos, but, since these yields are considerably affected by local conditions, weather, etc., there

is no need, in my opinion, to give the approximate yield of each variety (the only two yielding 5,000 kilos per hectare are Nos. 579 [S. P. I. No. 34234] and 598 [S. P. I. No. 34233], most of the others running about 4,000 to 4,300 kilos per hectare). The data regarding the number of days for maturing the crop are, of course, not of much value to you, considering the vastly different conditions under which these varieties will be grown in the States and considering the variation of the individual sensitiveness of the varieties to local influences." (*Barrett.*)

Seeds of the following:

34220. *Arabon.*
34221. *Binugayan carcar.*
34222. *Baybay.*
34223. *Binatad.*
34224. *Binankero.*
34225. *Calodo.*
34226. *Cabayuran.*
34227. *Calobang.*
34228. *Cavitenang nagmaliu.*
34229. *Ilangitnon.*
34230. *Joquianan.*
34231. *Lauá.*
34232. *Mancasar.*
34233. *Manticanon.*
34234. *Manabun-ac.*
34235. *Macan Santa Rita.*
34236. *Macan Silangan.*
34237. *Magpunit.*
34238. *Minaya.*
34239. *Pilapil.*
34240. *Piniling Daniel.*
34241. *Quinaluay.*
34242. *Quinanay.*
34243. *Quinatia.*
34244. *Quiriquiri.*
34245. *San Pablo.*
34246. *Tayading pulá.*
34247. *Takilid.*
34248. *Tungcadol.*
34249. *Virgen.*

34250 and 34251.

From Saff, Egypt. Presented by Mr. Alfred Bircher, The Middle Egypt Botanic Gardens. Received August 6, 1912.

34250. DOVYALIS CAFFRA (Hook. and Harv.) Warb. (*Aberia caffra* Hook. and Harv.) **Kei-apple.**

"A small tree, 12 to 30 feet in height, often thornless when in tree form, but exceedingly thorny when kept cut as a hedge, for which purpose it is much used, as it is impenetrable and when once established stands drought remarkably well. The seeds soon lose their vitality when kept dry, but germinate freely when fresh, and the plants are easily transplanted in the various nursery stages if not allowed to get a secure foothold, which they do rapidly. It does not succeed where frosts are regularly severe, but elsewhere requires to be cut twice a year to keep it in good hedge form and makes a dense 5-foot hedge in five years. It stands cutting to any extent, and if a hedge has been allowed to make too much headway when young and becomes open below it can be cut to the ground level and started afresh from the coppice shoots. Blanks in a hedge, if not too wide, can be remedied by interplaiting branches. The fruit is globose or depressed globose, minutely velvety, 1 to 1½ inches in diameter, bright yellow, resembling an apricot, edible, and used in preserves, but of too high flavor to be used alone. It is too sour for dessert use unless perfectly ripened under bright sunshine. It is sometimes attacked by the common peach maggot." (*Sim, Forest Flora of Cape Colony.*)

34251. CORDIA MYXA L. **Sebesten.**

"In India the tender young fruit is eaten as a vegetable and is pickled; the ripe fruit is eaten and is greedily devoured by the birds; the kernel is eaten and tastes somewhat like a filbert; that of the cultivated tree is better. The

34250 and 34251—Continued.

wood is soft and is said to have furnished the timber from which the Egyptian mummy cases were made. It is one of those used for preparing fire by friction in India. It is olive colored, grayish, or light brown, coarse grained, easy to work, strong, and seasons well; it is readily attacked by insects. It is used for boat building in India, for well curbs, gunstocks, and agricultural implements, and in Bengal for canoes. It is an excellent fuel. The weight of a cubic foot varies from 28 to 42 pounds. The viscid pulp of the fruit is used as birdlime in India, and the kernel is used for marking linen, but the mark is fugacious. The bark is extracted in ribbon-like layers and then twisted into cordage. In its lace-bark appearance the bast resembles sterculia. It is white in color, soft, and of inferior tenacity." (*Maiden, Useful Native Plants, and Dodge, Useful Fiber Plants.*)

Distribution.—A shrub or low tree cultivated in the Tropics of the Old World from Egypt through India and Cochin China to Australia.

34252. BETA sp. **Beet.**

From Artwin, in the southwestern part of the Caucasus, Russia, on the shore of the Black Sea. Presented by Mr. A. Rolloff, director, Botanic Garden, Tiflis, Caucasus, Russia. Received August 13, 1912.

Seeds of the native Caucasian beet, introduced for the work of plant breeders interested in this genus.

34253. CARISSA OVATA R. Brown.

From Brisbane, Queensland. Presented by Mr. J. F. Bailey, Botanic Gardens. Received August 15, 1912.

For previous introductions and descriptions, see S. P. I. Nos. 31111 and 34153.

34254. JUGLANS AUSTRALIS Griseb. **Walnut.**

From Sucre, Bolivia. Presented by Mr. Ernest F. Moore, British vice consul. Received August 10, 1912.

"*Boliviensis.* These are from the same species of walnut that grows in the tropical Santa Cruz, but were taken from a higher altitude, approximately 7,500 feet, and not more than 100 miles from Sucre." (*Moore.*)

34255 and 34256. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

From Paramaribo, Surinam. Presented by Dr. P. J. S. Cramer, Director of Agriculture. Received August 14, 1912.

Seeds clay or buff colored. Quoted notes by Dr. J. Sack, Acting Director of Agriculture.

34255. "*Djari pesie.* Is grown as a vegetable principally."

34256. "Grown as a vegetable and also as a forage crop."

34257. EUCHLAENA MEXICANA Schrad. **Teosinte.**

From Durango, Mexico. Presented by Mr. T. C. Hamm, American consul, who obtained it from Dr. H. W. Jackson. Received August 19, 1912.

"The plant known as teosinte, or asese, which is supposed to be the antecedent of common maize, grows in some parts of the State of Durango. The plant occurs in a wild state. Only one attempt, so far as I have been able to learn, has been made to cultivate it. Two or three years ago a Mexican ranchman gathered a quantity of the seed, which he planted as a forage crop, with most excellent results. The plant

flowers in the month of July and matures in November. The height attained by the plant varies greatly according to soil, climatic conditions, etc., the full-grown plant running from about 50 to 75 inches in height in this State. Teosinte closely resembles the common maize in its earlier stages, but becomes more bushy as it develops, owing to the large number of suckers thrown out by the parent stalk. The leaf is very similar to that of the maize in all stages of its development. A single stalk of teosinte will have from 10 to 15 ears which, unless the teosinte has mixed with maize, have practically no cob or core.

"The reason why little or no use is made of this valuable plant is that when planted near corn it readily crosses with the latter and spoils the corn crop, which is the staple agricultural crop of this district. It is reported that the natives have made tortillas from the ground seed of teosinte, but such instances are very rare." (*Hamm.*)

34258 and 34259.

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received August 16, 1912.

34258. ECHIUM AUBERIANUM Webb and Berth.

"This is a very striking Teneriffe alpine plant growing at the Canadas on its rocky walls at an elevation of between 8,000 and 9,000 feet above sea level. It throws up in the second year a single thyrsus of beautiful pink flowers. I have just had one in flower 3½ meters high (11 feet 8 inches). *Echium wildpretii*, which I do not have, is probably this same plant or a hybrid of it. The latter has been cultivated at Kew Garden for over 10 years.

"This may turn out to be a valuable fodder plant in southern California, as goats are fond of it. Its rosette of leaves is more than 1 yard across." (*Perez.*)

Distribution.—A pink-flowered perennial found on the alpine slopes of the island of Teneriffe.

34259. ECHIUM CANDICANS × SIMPLEX.

"This is a new hybrid obtained this year by the writer. The thyrsus is light blue; a beautiful plant." (*Perez.*)

34260 to 34262.

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received August 16, 1912.

Seeds of the following:

34260. PANCRATIUM CANARIENSE Ker.

"This is a Canary plant of the coast region, like *P. maritimum*. It flowers in October." (*Perez.*)

Distribution.—A bulbous plant with irislike leaves and umbels of large white flowers, found in the Canary Islands.

34261. ASPARAGUS ALBUS L.

Asparagus.

"*Pastorianus.* This plant has been written about lately as simulating Larix. I received notes from Mr. Fairchild about it last year." (*Perez.*)

34262. GENISTA SPLENDENS Webb and Berth.

"This is a native of the mountains of Palma (Canary Islands), where it is called 'Gacia Blanca' in contrast to *Cytisus stenopetalus*, which is called 'Gacia.' It is a beautiful plant with somewhat silvery leaves and bright orange-yellow flowers. It is a forage plant also, like *Cytisus stenopetalus*, which is much employed as such in Palma." (*Perez.*)

34263. BISCHOFIA JAVANICA Blume. **Toog.**

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received August 12, 1912.

"A tall tree known as toog, with a fairly regular, unbuttressed, short bole with a wide-spreading crown. It is intolerant of shade. The bark is dark brown, soft to the touch, shedding in thin, large scales. The inner bark is red with a thin, dark-red latex. The leaves are alternate, trifoliate, and smooth, with the edges of the leaflets toothed. The sapwood is light cream colored; the heartwood is red, moderately hard, and moderately heavy." (*Whitford, Forests of the Philippines.*)

34264 to 34272.

From Rome, Italy. Presented by Dr. Gustav Eisen, California Academy of Sciences, San Francisco, Cal. Received August 14, 1912.

Seeds of the following; quoted notes by Dr. Eisen:

34264. PRUNUS ARMENIACA L. **Apricot.**

"These seeds were procured in a restaurant in Rome. Locality not known. This variety is probably the finest apricot I have ever tasted, being larger than our average Moorpark, globular, but with apex characteristically pointed, the point being short but very acute and set off suddenly and distinctly. Ripens evenly all around. Very sweet and highly flavored. Color deep orange."

34265. PRUNUS ARMENIACA L. **Apricot.**

"These apricots are said to come from the vicinity of Frascati, near Rome, in the Alban Hills. Some are said to have sweet seeds."

34266. CORYLUS AVELLANA L. **Filbert.**

"From Boscotrecase, near Naples. Name: *San Giovanni.* The earliest filbert known in that part of Italy, ripening by June 24. Of very good quality, though not as highly flavored as the wild nut, but remarkably well filled and solid. Valuable on account of its earliness."

34267. PRUNUS DOMESTICA L. **Plum.**

"*Papagone.* Average $2\frac{1}{2}$ inches long by $1\frac{1}{2}$ inches wide. Largest $2\frac{3}{4}$ to even 3 inches long by $1\frac{5}{8}$ inches wide; elongate ovoid; greenish yellow, darker green on shaded side. Stalk short, half inch to less in length. Fine gray bloom. Very thin and smooth skin. Seed very thin pitted, sulcate edge, and remarkably small for the size of the fruit. Flesh firm, sweet, and highly flavored, adheres slightly to the stone."

34268. PRUNUS DOMESTICA L. **Plum.**

"Prune called *Prunaringia*, grown near Naples. The name may also, and more properly, be spelled *Prunarigno* or *Prunarignia*, and I am told that possibly it means Pruno di India, though I prefer to think that the name in some way refers to the main characteristic of the fruit—one or two vertical cracks ('rigno') when the fruit is fully ripe. In size this prune or plum resembles the *Papagone* but is more irregular. General shape like *Papagone*, but the color is deeper green. Very sweet and even more flavored, but the value of this splendid plum is lowered by the fact that when ripe it always possesses one or more vertical splits on the cheek. Thus, it does not present the same fine appearance as the *Papagone* and could not stand long shipment; but for canning and preserving this plum should be excellent. The seed, in proportion to the fruit, is considerably larger than the *Papagone* but somewhat similar in shape; thin and oblong, but less curved than the *Papagone*. Both ripen at about the same time and are at the height of perfection at Boscotrecase by August 1."

34264 to 34272—Continued.

34269. PRUNUS ARMENIACA L. **Apricot.**

"*Crisomelo.* From Boscotrecase. Very large, rounded oblong without points, color orange, ripens evenly all around."

34270. PRUNUS ARMENIACA L. **Apricot.**

"These apricots are all from the same garden and are said to be *Crisomelo.* As, however, the lots differ from each other, I take it that they must be from different trees, probably seedlings, though about this I can give no absolute information, not having collected them myself. But the fact that the seeds differ in size as well as in shape from the other *Crisomelos*, to me indicates a difference in variety. I have, however, been assured that all were selected from the best *Crisomelos.*"

34271. PRUNUS DOMESTICA L. **Plum.**

"Roman market. Best plum coming to this market, and seems especially good for shipment, as the flesh is firm. Size 2 to 2½ inches long by 1½ inches wide. Color green with red cheek. No particular name. Quality fair, but neither so sweet nor so well flavored as *Papagone* and *Prunaringia*, S. P. I. Nos. 34267 and 34268, which both belong to the Naples market."

34272. PRUNUS DOMESTICA L. **Plum.**

"Very large, globular, golden yellow. A variety of Reineclaude of the very best quality. From Frascati."

34274. ANNONA RETICULATA L. **Custard-apple.**

From Puerto Plata, Dominican Republic. Presented by Mr. Charles M. Hathaway, jr., American consul. Received August 16, 1912.

34275. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

From Soochow, China. Presented by Mr. N. Gist Gee. Received August 19, 1912.

"This is a mixed lot of peach seeds containing some from red clingstones and some from white freestones."

34289. GOSSYPIUM HIRSUTUM L. **Cotton.**

From Coimbatore, India. Presented by Mr. R. Cecil Wood, president, Agricultural College, through Mr. C. V. Piper. Received August 20, 1912.

"*Cambodia.* This cotton is said to have been introduced from Cambodia into southern India, where it has yielded far more heavily than any other cotton. It is of the American Upland type." (*Piper.*)

"This cotton has a close resemblance to the American Upland type and has been looked upon as an American cotton that has been acclimatized in Cambodia, though this may not prove to be the case. There is historical evidence of the introduction of a superior type of cotton from Siam to Louisiana in early days, and this may have been the origin of the long-staple varieties formerly grown so extensively in the Delta regions of Louisiana and Mississippi. Thus the Cambodia cotton may prove to be related to the American long-staple type. A variety of Upland cotton from Cochin China was studied in Egypt in 1910 which may prove to be similar to the present importation. An account of this cotton was published in Bulletin 210 of the Bureau of Plant Industry on Hindi Cotton in Egypt. The Cambodia cotton has been grown for a few years in southern India and has given much better results than any variety introduced from America. An account of the experiments in India was published in the Daily Consular and Trade Reports, December 7, 1910." (*O. F. Cook.*)

PLANTS OF SESAME (SESAMUM ORIENTALE L.) 3 TO 4 FEET TALL, AT THE YARROW FIELD STATION, ROCKVILLE, MD. (S. P. I. No. 26438.)

An important oil seed, much cultivated in China, India, Palestine, and to some extent in Mexico. Selection work will be necessary to do away with the shattering of the seed as soon as it is ripe. The oil is important for table use, and the seeds are much used in confectionery in oriental countries. See S. P. I. No. 34290. (Photographed by Dorsett, No. 8175, July 23, 1911.)

34290 and 34291.

From Hankow, China. Presented by Mr. Roger S. Greene, American consul general. Received August 21, 1912.

Seeds of the following; quoted notes by Mr. Greene:

34290. SESAMUM ORIENTALE L. (*S. indicum* L.) **Sesame.**

"*Tzu ma.* A good culinary oil is expressed from these seeds."

For an illustration of sesame plants growing at the Yarrow Field Station, Rockville, Md., see Plate V.

34291. CANNABIS SATIVA L. **Hemp.**

"*Ta ma.* Said to be the hemp which grows higher than all other kinds. I am told that there are two principal varieties of *ta ma* hemp in this neighborhood, one of which yields three crops a year, while the other yields only one crop. This tall hemp of which I am sending you seed gives only one crop."

34292. BOMBAX sp.

From Shek Lung, China. Presented by Mr. A. J. Fisher. Received August 10, 1912.

"This tree at first has a great many sharp thorns on its trunk, but after four or five years these thorns disappear. It grows into a big, high tree. I should think that it would not stand frost. It sheds its leaves in the winter here. In the spring before the leaves come it shows a red flower, followed by pods in which the cotton and seed are borne. It seems to be native to this soil and grows very easily and quickly. It is not cultivated, but usually grows up wild. It is called *min fa shue* (cotton tree). It is used by the Chinese for making pillows and is dearer than the imported cotton. It seems very good, for it does not gather in lumps like the ordinary cotton." (*Fisher.*)

34293 and 34294. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) Sorghum.

From Cedar Hill, Tex. Presented by Mr. D. C. Nance, through Mr. C. V. Piper. Received August 26, 1912.

"This is a small, sweet-stemmed, kafirlike sorghum, but with a looser head than ordinary kafir. Mr. Nance writes that he has grown Red kafir continuously since 1908. The seed of it was obtained from the David Hardie Seed Co., of Dallas, Tex. 'I saw nothing peculiar growing among my Red kafir until 1911, when I discovered a few plants of kafirita. My attention was directed to them by reason of their diminutive size and early maturity. I noticed further that some plants bore red seeds and others white, and from this fact I gathered that kafirita was not merely a dwarf Red kafir, so I searched out the fields—6 acres—for other similar plants and obtained perhaps 2 ounces of seed in all. This I planted carefully in 1912, and the plants bred perfectly true. I suppose that we may as well assume that the plant originated here on my farm. It is evidently not just a dwarf Red kafir, for that view does not account for the white seeds. However, excepting this feature, together with a constantly yellow tinge of the whole plant except the seed, it is a perfect dwarf Red kafir.' (D. C. Nance, letter, August 7, 1912.)" (*C. V. Piper.*)

34293. White. **34294.** Red.

34295 to 34297. IRIS spp. **Iris.**

From California. Presented by Miss Alice Eastwood, San Francisco, Cal. Received August 26, 1912.

Seeds of the following; quoted notes by Miss Eastwood:

34295. IRIS TENUISSIMA Dykes.

"From Goose Valley, Shasta Co., Cal. Collected by Wallace Dillman."

34296. IRIS sp.

"Dunsmuir, Cal. I think it is *Iris tenuissima*, but it may be *Iris amabilis*. Collected by Alice Eastwood."

34297. IRIS AMABILIS Eastwood.

"Collected by Mr. G. P. Rixford, Loomis, Placer Co., Cal.

34299 and 34300.

Presented by Dr. C. F. Rife, Naperville, Ill. Received August 22, 1912.

34299. CARICA PAPAYA L. **Papaya.**

"From the Marshall Islands, Oceania. Mummy apple, called *pawpaw* in Australia." (*Rife.*)

34300. ANNONA RETICULATA L. **Custard-apple.**

"From Tahiti, Society Islands." (*Rife.*)

34301 and 34302.

From Edinburgh, Scotland. Presented by Prof. Bayley Balfour, Royal Botanic Garden. Received August 23, 1912.

Seeds of the following:

34301. CYTISUS HILLEBRANDTII (Christ) Briquet.

Distribution.—A spreading leguminous plant found on the mountains in Gran Canaria Island in the Canaries.

34302. CYTISUS ALBUS MICROPHYLLUS Aschers. and Graebn.
(*C. austriacus* L.)

Distribution.—A white-flowered, small-leaved leguminous plant found on the slopes of the Balkans in southern Europe.

34303 to 34308.

From Edinburgh, Scotland. Presented by Prof. Bayley Balfour, Royal Botanic Garden. Received August 23, 1912.

Seeds of the following:

34303. ACACIA WHANII F. Mueller.

Distribution.—A leguminous shrub with flowers in globular heads, found in Victoria in Australia.

34304. BERBERIS GUIMPELI Koch and Bouche. **Barberry.**

34305. CARISSA BISPINOSA (L.) Desf. **Amatungulu.**
(*C. arduina* Lam.)

34306. PITTOSPORUM EUGENIOIDES Cunningham. **Tarata.**

"A beautiful tree, sometimes 40 feet in height, whose pale-green, broadly oblong leaves, 2 or 3 inches long, with undulating margins, emit, when bruised, a lemonlike odor. The delicate venation and light-colored, almost white midrib add to the beauty of the leaf. The Maoris mix the resinous exudation from the white bark with the juice of the sow thistle and work it into a ball,

34303 to 34308—Continued.

which they chew. In October (in New Zealand) the tree produces large corymbs of yellowish green flowers, whose heavy, honeyed odor is almost sickly in its intensity. The plant is probably often self-pollinated, but though stamens and pistils are always present one or the other is often abortive, so that the flowers are often practically unisexual. The wood of this species, like that of the other species of the genus, is almost worthless. The tree is often cultivated for its beauty and is sometimes used to form an ornamental hedge." (*Laing and Blackwell, Plants of New Zealand.*)

Distribution.—A small round-headed tree with very fragrant flowers, found on the North Island and the South Island of New Zealand.

34307. PRIMULA SINOLISTERI Balf. f. **Primrose.**

"This plant is of special horticultural interest. It was introduced in 1908 by Bees, Ltd., grown from Forrest's seeds, and promises to be in our gardens what *P. obconica* Hance ought to have been, but is not. *P. sinolisteri* Balf. f. has not the irritant hairs. It is a free grower, forming compact masses of dark green, acutely lobed leaves, and the trusses of white (sometimes lilac) flowers are many. In our northern climate it is not quite hardy—like true *P. obconica* Hance in that respect. It was sent out as *P. listeri* King—a venial error of naming—and the name *sinolisteri* has been given in the hope of making the change of nomenclature less disturbing." (*Balfour, Chinese and Other Primulas, Jour. Roy. Hort. Soc., vol. 29, p. 142, 1913.*)

34308. PRIMULA FORRESTII Balf. f. **Primrose.**

"*P. forrestii*, of the section *Callianthæ*, is a curious as well as a beautiful species, and a lover of dry, stony situations. The flowers are large and numerous, of a rich deep shade of orange, and fragrant. The foliage is densely coated with glandular hairs, and, in the fresh state, has a peculiar, but not unpleasant, aromatic odor. The plant is specially adapted to the situation in which it is commonly found, i. e., the crevices of dry, shady limestone cliffs, in having a long, intensely tough, woody rootstock of 2–3 feet in length. The base of this is very tapered, generally only a few inches being inclosed in the crevices of the rocks. From this point the plant is pendulous for almost the full length of the remainder of the rootstock, a few inches of the growing apex being turned out and upwards. The rootstock for two-thirds of its length is covered with the induviæ of previous year's foliage, which, at the apex, form a dense matted mass with the fresh foliage and flowers arising from the center. Judging from the length of the rootstocks of specimens seen growing, allowing two whorls of leaves for one year's growth, a very liberal estimate, some plants must reach the age of 50–100 years. Another feature which pointed to great age in the species was, the cliffs behind some of the larger specimens were scored and worn to the depth of fully an inch by the motion of the plants in the wind." (*Forrest, Primulaceæ from Western Yunnan, Notes from the Edinburgh Royal Botanic Garden, vol. 4, p. 15, 1908.*)

Distribution.—A primrose with fragrant deep-yellow flowers, found on the slopes of the mountains at an elevation of 9,000 to 11,000 feet in the northwestern part of the province of Yunnan in China.

34309. CARYOPHYLLUS sp.

(*Eugenia* sp.)

From Paraguay. Presented by Mr. C. F. Mead, Buenos Aires. Received August 16, 1912.

"In the Guarany language this fruit is called *ywapurú*. I have never seen it in any place except in the monte in the district between Sapucay and Asuncion, nor

can I find any mention of it in any botanical books. It grows in bush form to a height of about 2 meters, the fruit, which is about the size and coloring of a dark-red plum, being borne in clusters about the main stalks. I have never tasted the fruit, but it is very highly spoken of by the natives here." (*Mead.*)

34311. PRUNUS CERASUS L. **Cherry.**

From Abchasica, Western Caucasus. Presented by Mr. A. Rolloff, director, Botanic Garden, Tiflis, Caucasus, Russia. Received September 9, 1912.

These are said by Mr. Rolloff to be seeds of wild, sour cherries and were sent in under the name *Cerasus caproniana abchasica.*

34312. SYZYGIUM SMITHII (Poir.) Niedenzu.

(*Eugenia smithii* Poir.)

From Melbourne, Australia. Presented by Mr. J. Cronin, curator, Botanic and Domain Gardens. Received September 9, 1912.

"A close-wooded tree from 1 to 3 feet in diameter and from 80 to 120 feet in height. The bark contains about 17 per cent of tannic acid and 3.6 per cent of gallic acid. The white, purplish-tinted fruits are produced in profusion, are acidulous and wholesome, and are eaten by the natives, small boys, and birds." (*Maiden, Australian Native Plants.*)

Distribution.—A tree found in North Australia, Queensland, New South Wales, and Victoria, in Australia.

34313. SOLANUM TUBEROSUM L. **Potato.**

From La Paz, Bolivia. Presented by Mr. Horace G. Knowles, American consul. Received September 9, 1912.

"A smooth, clean-looking, thin-skinned, white potato of fine flavor and said to be a good keeper." (*Knowles.*)

"Tubers of medium size, decidedly round-oblate in shape; skin dark red; eyes large and deep. In many respects the tubers resemble the American variety known as 'Bliss Triumph'". (*William Stuart.*)

34314. HORDEUM sp. **Barley.**

From La Paz, Bolivia. Presented by Mr. Horace G. Knowles, American consul. Received September 9, 1912.

"The straw of this barley grows to more than 4 feet in height and must have considerable nourishment, as it is about the only feed given to the animals in this altitude of Bolivia." (*Knowles.*)

34315. RAPHIA sp. **Rafia palm.**

From McCale Sana, Lumbwa, British East Africa. Presented by Mrs. Ernest Smith. Received September 13, 1912.

"This palm is indigenous to this country, and the midrib of the huge leaves is largely used in the roofing of the buildings." (*Smith.*)

34316. COLOCASIA sp. **Dasheen.**

From Boca Ceiga, via Largo, Fla. Presented by Mr. T. S. Baldwin, in care of Baldwin & Bosworth. Received August 19, 1912.

"From the appearance of the corm and tubers, this dasheen is of the Japanese type. The corm is acrid in the raw state and is of coarse texture, strong flavor, and deep-violet color when cooked. The tubers are nonacrid when raw, are rather moist when cooked, and have a flavor much like the ordinary potato." (*R. A. Young.*)

34317. TRITICUM AESTIVUM L. **Wheat.**
(*T. vulgare* Vill.)

From Italy. Presented by Mr. William W. Burt, American vice consul, Florence. Received September 10, 1912.

"Grown in the Pistoja district. The statement from the grower is that the crop this year has been poor both in quality and quantity, that the seed is sown in the latter part of October and the first part of November, and the wheat is gathered in the first part of July. This wheat was grown on a plain at 184 feet above sea level." (*Burt.*)

34318 and 34319.

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received September 16, 1912.

34318. ARECA CATECHU L. **Betel palm.**

Distribution.—A tall palm found in the damp, hot regions of Asia and eastward through the Malay Archipelago to the Philippines.

34319. ORANIA REGALIS Blume. **Palm.**

"A rare palm of the Philippines, rather closely related, I believe, to the coconut, and which I believe would make an interesting greenhouse plant; it should also make a good ornamental for southern Florida, Porto Rico, and Cuba." (*Barrett.*)

See S. P. I. Nos. 3799 to 3801 for previous introduction.

34320 to 34325.

From Puerto Plata, Dominican Republic. Presented by Mr. Charles M. Hathaway, jr., American consul. Received September 9, 1912.

Seeds of the following; quoted notes by Mr. Hathaway:

34320. ACHRAS ZAPOTA L. **Sapota.**

"The fruit is ellipsoid in shape, exterior dark russet, somewhat like mushrooms or fungi, interior deep crimson verging toward coral but darker. Its taste is sweet and spicy and hardly likely to appeal to the average American palate."

34321 to 34325. ANNONA SQUAMOSA L. **Sweetsop.**

"The English-speaking islanders call this the 'sugar-apple.' It is, to my taste, a fine fruit."

"*Annona squamosa* L. is perhaps the most widely cultivated of all the custard-apples. It is essentially tropical, while the cherimoya (*Annona cherimola* Miller) is subtropical and will not flourish at sea level in hot countries. The fruit varies in quality, and, as in other fruits which have been cultivated for a long time, care should be taken in selecting the best varieties for asexual propagation. For this reason the seeds of the various fruits sent to the department have been kept distinct." (*W. E. Safford.*)

34326 to 34328.

From Nogent-sur-Marne (Seine), France. Presented by Mr. E. Prudhomme, director, Colonial Garden. Received September 19, 1912.

34326. CYMBOPOGON SCHOENANTHUS (L.) Spreng. **Ginger grass.**
(*Andropogon schoenanthus* L.)

See S. P. I. No. 29456 for description.

34326 to 34328—Continued.

34327. PIPER CUBEBA L. f. **Cubeb pepper.**

"The cubebs of commerce, which are of importance chiefly in medicine, are the berries of a species of pepper vine, easily distinguished from the ordinary pepper by the stalked and larger berries, or 'corns.' The plant is a native of Java, Sumatra, etc., and thrives under similar conditions as pepper, requiring live or artificial supports and a certain amount of shade. The world's supply of cubebs is obtained chiefly from Java, where the plant is cultivated. The plants are best propagated by cuttings taken from among the top or fruitful shoots, such plants being more productive than those taken from near the base." (*Macmillan, Handbook of Tropical Gardening.*)

Distribution.—A climbing shrub found in Java and other islands of the Malay Archipelago.

34328. PIPER CHABA Hunter.

Distribution.—Commonly cultivated in India and the Malay Archipelago.

34329. SECALE CEREALE L. **Rye.**

From Wronow, Koschmin, Posen, Germany. Presented by Saatzuchtwirtschaft Fritz Claassen. Received September 12, 1912.

Original R. von Rümker winter rye No. 2.

34330. BARYXYLUM INERME (Roxb.) Pierre.
(*Peltophorum ferrugineum* Benth.)

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received September 21, 1912.

"This tree is a native of the Philippines and is one of the best shade trees that we have. It is evergreen and bears large terminal panicles of very showy yellow flowers. The species is of wide distribution in the Malayan region, and in the Philippines grows in nature near the seashore. It will certainly thrive in Cuba, Porto Rico, and Panama, and probably in southern Florida and in southern California. There is an excellent colored figure of it in the third edition of Blanco's "Flora de Filipinas." (*Merrill, in letter of August 20, 1912.*)

Distribution.—A tall, unarmed tree found in Ceylon and eastward through the Malay Archipelago to northern Australia.

34331 to 34333. CUCUMIS MELO L. **Muskmelon.**

From Soochow, China. Presented by Mr. N. Gist Gee. Received September 23, 1912.

Seeds of the following; quoted notes by Mr. Gee:

34331. "Round, green melon. Very nice."

34332. "Yellow-and-white striped melon, 6 to 8 inches in length."

34333. "Small white melon, sweet, 4 to 5 inches in length."

34334. RUBUS LASIOCARPUS Smith. **Raspberry.**

From India. Presented by Mr. John W. B. Field, Castlemaine, Victoria, Australia. Received September 9, 1912.

See S. P. I. No. 32453 for description.

34335. TRITICUM DICOCCUM Schrank. **White emmer.**

From Italy. Presented by Mr. William W. Burt, American vice consul, Florence. Received September 10, 1912.

"These are typical heads of white emmer, a cereal related to spelt and wheat." (*C. R. Ball.*)

34336. OLEA EUROPEA L. **Olive.**

From Kew, England. Presented by Dr. David Prain, director, Royal Botanic Garden. Received September 30, 1912.

"*Cinditiva.*"

Cuttings.

34339. CARICA PAPAYA L. **Papaya.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii experiment station. Received September 30, 1912.

"A monœcious variety and our best in flavor." (*Higgins.*)

Seeds.

BOTANICAL NOTES AND PUBLICATION OF NEW NAMES.

PLANT LISTED IN A PREVIOUS INVENTORY.

26116. VILLARESIA CHILENSIS (Molina) Stuntz.

(*Citrus chilensis* Molina, Saggio sulla Historia Naturali Chili, p. 171, 1782.)

(*Villaresia mucronata* Ruiz and Pavon, Flora Peruviana, vol. 3, p. 9, pl. 231, 1802.)

Seeds of this Chilean icacinaceous tree were received under the name *Villaresia mucronata* Ruiz and Pavon. The earliest name applied to this plant, however, was *Citrus chilensis* Molina, which specific name it is necessary to adopt.

PLANTS LISTED IN THIS INVENTORY.

34167. WARNERIA THUNBERGIA (L. f.) Stuntz.

(*Gardenia thunbergia* L. f., Supplementum Plantarum Systematis Vegetabilium, p. 162, 1781.)

Seeds of this white-flowered rubiaceous shrub were received under the name *Gardenia thunbergia* L. f. In publishing this name, the younger Linnæus cited *Thunbergia capensis* Montin (Kongl. Vetensk. Acad. Handl. Stockholm, vol. 34, p. 288, pl. 11, 1773). Montin, however, merely characterized the genus Thunbergia, with neither binomial nor citations. The specific name given by Linnæus filius is therefore the earliest and should be adopted. The reason for using the generic name Warneria for the plants usually referred to the genus Gardenia is explained under *Warneria augusta* Stickman, S. P. I. No. 30498, in Bulletin No. 242, Bureau of Plant Industry, p. 14, 1912.

34169. TRICALYSIA FLORIBUNDA (Harvey) Stuntz.

(*Kraussia floribunda* Harvey, Hooker's Journal of Botany, vol. 1, p. 21, January, 1842.)

(*Coffea kraussiana* Hochstetter, Flora, vol. 25, p. 237, April, 1842.)

(*Tricalysia kraussiana* (Hochst.) Schinz, Mem. Herb. Boiss., vol. 10, p. 67, 1900.)

Seeds of this rubiaceous shrub from Natal were received under the name *Kraussia floribunda* Harvey. This name, published in January, 1842, was based on Krauss's No. 121, which was also the type of *Coffea kraussiana* Hochstetter, published in April, 1842. As the plant is now considered to belong to the genus Tricalysia and the combination *Tricalysia floribunda* seems never to have been published, it is necessary to adopt it now.

34171. PTERYGOCARPUS FLORIBUNDUS (Meyer) Stuntz.

(*Dregea floribunda* Meyer, Commentariorum de Plantis Africae Australioris, vol. 1, fasc. 2, p. 199, 1837.)

Seeds of this asclepiadaceous plant from South Africa were received under the name *Dregea floribunda* Meyer. The generic name Dregea had, however, been used by Ecklon and Zeyher in June, 1836 (Enumeratio Plantarum Africae Australiae Extratropicae, p. 350), for certain umbelliferous plants now considered to belong to Peucedanum. It is therefore necessary to adopt the generic name Pterygocarpus, published by Hochstetter in 1843 (Flora, vol. 26, bd. 1, p. 78). The type species of Hochstetter's genus is *P. abyssinicus*, a plant congeneric with *P. floribundus*.

34181. MICROCOS LATERIFLORA L.

(*Grewia asiatica* L., Mantissa, p. 122, 1767.)

Seeds of this yellow-flowered tiliaceous shrub from India were received under the name *Grewia asiatica*. The generic names Microcos and Grewia, which are recognized as congeneric, were both published in Species Plantarum, 1753, Microcos on page 514, and Grewia on page 964. Microcos having priority of publication, it is necessary to adopt it. The present species was published by Linnæus as *Grewia asiatica* in 1767, but had been previously published (Species Plantarum, p. 514, 1753) as *Microcos lateriflora*, which name it is necessary to use here.

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WILLIAM A. TAYLOR, *Chief of Bureau.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1912 (NO. 33; NOS. 34340—34727).

INTRODUCTORY STATEMENT.

The remarkable success which has attended the introduction of Chinese plants into America is no doubt due to the similarity between the climate of eastern China and that of eastern North America. This success of the Chinese plants, which nurserymen are rapidly coming to realize, will give special interest to the remarkable collection of plants from western China which, through the courtesy of the Arnold Arboretum, will be distributed from this office as soon as a stock of them has been prepared. The collection was made by Mr. E. H. Wilson, now of the Arboretum, during his expeditions in the various provinces of western China, and among the 79 different numbers (34523 to 34601), most of which will find a place somewhere in American horticulture, the following are of special economic importance as plant-breeding material or for use as ornamentals in both city and country yards: No. 34601, a new and remarkable species of wild peach, *Prunus mira,* which bears an edible fruit containing a smooth instead of a furrowed stone (a character quite unknown heretofore among peaches), which may be used in the improvement of the commercial peach; Nos. 34525, 34527, and 34546, three promising new hollies which may prove hardy here; No. 34537, a new Ampelopsis, *A. megalophylla,* with large, divided leaves 3 feet in diameter; No. 34544, a 70-foot maple, *Acer catalpifolium,* the leaves of which color a golden yellow in autumn; Nos. 34538 and 34549, the Yunnan pine, *Pinus sinensis yunnanensis;* No. 34555, the Chinese butternut, *Juglans cathayensis,* a bush or small tree; Nos. 34558, 34560, 34563, 34574, 34576, and 34582, six species of Prunus for those who are doing breeding work in this genus; Nos. 34580 and 34581, two species of Vitis; No. 34583, the Chinese close relative of the southern sweet-gum tree, *Liquidambar formosana,* which has proved hardy in the Arnold Arboretum; No. 34589, an undescribed species of quince, *Cydonia* sp.; No. 34590, a new spine-bearing hazelnut (*Corylus* sp.) with large fruits; and No. 34599, a new species of Magnolia, *M. wilsonii.*

During the period covered by this inventory Messrs. Paul and Wilson Popenoe, two young California plant collectors who have visited India in the interest of commercial firms, have sent in some unusually interesting material, including the bangilan, No. 34366, *Sterculia macrophylla*, a striking ornamental with brilliant orange-scarlet fruits which produce a blaze of color and can be seen for a great distance; No. 34494, the rambutan from Singapore, *Nephelium lappaceum*, one of the commonest and most palatable fruits of the Malay peninsula, which has not yet been acclimated in the Western Hemisphere; No. 34495, the rambe, *Baccaurea motleyana*, a straw-colored fruit with a gooseberry flavor, from the same region; No. 34496, the remarkable duku, or doekoe, of Java, *Lansium domesticum*, a fruit which, notwithstanding its delicious and refreshing character, has been entirely neglected in the West Indies. Mr. Wilson Popenoe has distinguished for the first time this duku from the langsat of the Philippines. From Seharunpur Mr. Popenoe sent a native amaranth, *Amaranthus gangeticus*, No. 34497, which is used in India in place of spinach.

From correspondents and our consuls abroad the following have been received: No. 34351, the African oil-bean tree, *Pentaclethra macrophylla*, from southern Nigeria, which yields seeds producing an oil only 10 per cent less valuable than cottonseed oil, probably adapted to conditions in southern Florida; Nos. 34353 and 34431, the baúno, *Mangifera verticillata*, a remarkable new species closely related to the mango and adapted to the inundated regions of Mindanao, but with white-fleshed fruit, the quality of which would put it on a par with the mango, while for stock purposes it may prove of value; Nos. 34356 to 34359, seeds of valuable timber-producing trees from Piracicaba, Brazil, for forestry experiments in Florida; No. 34361, a new strain of hairy vetch developed at Guelph, Canada, adapted to the humid conditions of the Eastern States; No. 34364, *Carissa carandas*, a black-fruited species of this interesting fruiting hedge plant from India, via Saff, Egypt; No. 34368, the pili nut of the Philippines, *Canarium ovatum*, a new table nut to be served just as salted almonds are now; Nos. 34381 and 34384 to 34386, four species of the genus Nothofagus, beeches of Chile, some of which, because of their valuable timber and evergreen character, deserve to be tested extensively in the moist coastal region about San Francisco; No. 34387, the *Persea lingue* of Chile, which, although reported to have leaves that are poisonous to stock, because of its ability to live on all kinds of soil should be tested as a stock for the avocado, and hybrids with it ought to be made; No. 34415, a seedless-fruited form of *Berberis vulgaris*, found at Sherborn, Mass., by Miss Martha L. Loomis and which, in view of the unusual fruitfulness of the bar-

berry, may prove of commercial importance; No. 34420, the famous nipa palm of the Orient, *Nypa fruticans*, with the leaves of which the houses of the natives are thatched and from the sap of which alcohol in great quantities is made, preliminary trials indicating that this palm will probably grow in southern Florida along the tidal swamps and possibly on the Everglades where not too cold; Nos. 34426 and 34427, a variety of pop corn from Spain with a purple aleurone layer and peculiarly adapted for cross-fertilization; Nos. 34440 to 34454, 15 named varieties of mango from Trinidad, representing local and East Indian introduced sorts; No. 34493, the che fruit from the Yangtze Valley, *Cudrania tricuspidata*, which has already fruited at Augusta, Ga., bearing a delicate-flavored edible fruit that looks like a small pink Osage orange, to which it is botanically related and with which it might hybridize; No. 34620, a wild species of asparagus, *A. acutifolius*, from the dry slopes of the Maritime Alps of southern France, the shoots of which are gathered and form a regular article of commerce, being thin but very delicate in flavor; No. 34622, the Bushman grass, *Aristida* sp., from the Kalahari Desert, which, together with the Tsama melon, forms the principal stock and game food of the country; No. 34630, a tall-growing tropical fruit-bearing vine, *Tetrastigma harmandi*, from Luzon, which has fruits that resemble the Scuppernong grape in appearance and make a good "refresco;" Nos. 34643 to 34654, through Miss E. R. Scidmore, a collection including the adzuki and other beans used in Japan for confectionery purposes and for the manufacture of the remarkable bean cheeses, or curds, which are so much used by the Japanese; No. 34657, through Mr. C. V. Piper, a subtropical lawn grass, *Osterdamia matrella*, for use in southern Florida, Hawaii, and Porto Rico, which at Manila has proved superior to Bermuda grass; No. 34661, a remarkable hybrid eucalypt, *Eucalyptus trabuti*, discovered by Dr. Trabut in Algiers and named after him, which proves to be one of the most vigorous eucalypts yet known and is said to be the first undoubted hybrid discovered; No. 34663, a variety of potato from Bogota, Bolivia, which the sender thinks is resistant to the Phytophthora, which disease, he reports, has made the acclimatization of imported varieties there impossible; No. 34697, a Korean persimmon, *Diospyros kaki*, which can be kept until Easter; No. 34698, a variety of avocado, *Persea americana*, of which a tree 100 years old was found by Dr. Gustav Eisen in the Pincio Garden at Rome, the fruits of which were mature in November before the early frosts of that region occur; No. 34713, a small-fruited variety of Chinese persimmon from Canton, which is used there as a stock on which to graft the larger fruited forms of this fruit; Nos. 34715 to 34724, a collection of seeds of New Zealand trees and shrubs suited to practically frostless regions.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the notes on nomenclature prepared under the supervision of the Committee on Scientific Orthography by Mr. S. C. Stuntz, who has also had general supervision of this inventory, as of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., July 22, 1914.

INVENTORY.

34340. COLOCASIA ESCULENTA (L.) Schott. **Dasheen.**
(*C. antiquorum* Schott.)

From Calabar, Southern Nigeria. Presented by Mr. F. Evans, Superintendent of Agriculture. Received October 4, 1912.

"The tannia or dasheen known here as 'coco yam,' or the 'little yam.' There are a number of varieties cultivated in this province; I have already seen five distinct kinds; the one I send you is called by the natives around here '*Ekuri akpan.*'" (*Evans.*)

Tuber.

34341 to 34343.

From Turkestan. Presented by Mr. Patrick O'Mara, New York, N. Y., who received them from Mr. Vaclar Niemetz, of the Russian Department of Agriculture. Received September 30, 1912.

34341. PYRUS sp. **Pear.**

34342. PLATANUS ORIENTALIS L. **Oriental plane tree.**

Distribution.—A spreading tree found in the countries bordering on the eastern end of the Mediterranean Sea from Greece to Persia. Generally cultivated as a street tree.

34343. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

"White fig-shaped." (*Niemetz.*)

34344 to 34348. STIZOLOBIUM spp.

From Parlakemedi. Presented by Mr. D. Hooper, Botanical Survey of India Department, Calcutta, India. Received September 30, 1912.

34344. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. **Lyon bean.**
(Reg. No. 34700.)

34345. STIZOLOBIUM sp.
(Reg. No. 34701.)

34346. STIZOLOBIUM PACHYLOBIUM Piper and Tracy. **Fleshy-pod bean.**
(Reg. No. 34702.)

34347. STIZOLOBIUM PACHYLOBIUM Piper and Tracy. **Fleshy-pod bean.**
(Reg. No. 34703.)

34348. STIZOLOBIUM PACHYLOBIUM Piper and Tracy. **Fleshy-pod bean.**
(Reg. No. 34705.)

"All these are recognized locally under the name of '*Dukku chikkudu,*' and have been known to be in cultivation for centuries." (*Hooper.*)

34349 and 34350. SECALE CEREALE L. **Rye.**

From Rittergut Wronow, Germany. Presented by Mr. Fritz Claassen. Received October 2, 1912.

34349. "Original K. von Rümker's winter rye. No. 1." Yellow.

34350. "Original K. von Rümker's winter rye. No. 2." Green.

34351. PENTACLETHRA MACROPHYLLA Bentham.

From Calabar, Southern Nigeria. Presented by Mr. F. Evans, Superintendent of Agriculture. Received October 4, 1912.

"African oil-bean tree. Besides producing edible seeds which yield a good oil, the tree is large and well formed and useful as a pasture shade." (*Evans.*)

"This tree has large flattened seeds covered with a hard, brown seed coat. They are from 1½ to 2¾ inches in length, 1.2 to 1.8 inches in breadth, and 0.3 to 0.4 inches in thickness. The oil, which is not a drying oil, on examination by a firm of soap makers was valued at about 10 per cent less than refined cottonseed oil, since the soap made was softer. The oil cake might be of equal value with that from cotton seed, but no tests have been reported." (*Bull. Imperial Institute, vol. 5, p. 10–14, 1908.*)

Distribution.—The valley of the Kamerun and Gabon Rivers in the Senegambia region of Upper Guinea, in western Africa.

34352. JUNIPERUS CEDRUS Webb. **Juniper.**

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez, through Mr. Raphael Zon, Chief of Silvics, Forest Service, United States Department of Agriculture. Received October 7, 1912.

"Dr. Perez has carried on a number of experiments with juniper berries. His advice is to separate the pulp from the seed and plunge the seed in boiling water for 10 seconds before sowing." (*Zon.*)

34353. MANGIFERA VERTICILLATA Robinson. **Baúno.**

From the Philippine Islands. Presented by Mr. William S. Lyon, Gardens of Nagtajan, Manila. Received October 5, 1912.

For description, see S. P. I. No. 34431.

34354. SALIX sp. **Willow.**

From Patagonia. Presented through Mr. Raphael Zon by Mr. Joseph E. Wing, who procured them from Señor Domingo Errecobarde, Trelew, Chubut, Argentina. Received October 7, 1912.

"Red willow."

34355. SAGUERUS MINDORENSIS (Beccari) O. F. Cook. **Palm.**

(*Arenga mindorensis* Beccari, Perkins, Fragmenta Florae Philippinae, p. 48, 1904.)

From Mindoro. Presented by Mr. E. D. Merrill, botanist, Bureau of Science, Manila, P. I. Received October 5, 1912.

Seeds of a Philippine palm were received as *Arenga mindorensis* Beccari, the name under which the species was first described. The generic name Areng was published in 1803 by Labillardière (Mém. Inst. Nat. Paris, Sci. Math. Phys., vol. 4, p. 209), with one species, *Areng saccharifera* (p. 215), now identified with *Saguerus pinnata* Wurmb. (Verh. Batav. Gen., vol. 1, p. 351, 1779), the type of the genus Saguerus. As both genera were founded on the same species, the older name Saguerus is being used instead of Areng, or Arenga.

"This palm is from 1½ to 3 meters in height; grows in thickets and on open grassy slopes. It should prove to be of decided value as an ornamental plant in greenhouses. It is probable, also, that it will grow out of doors in southern California and southern Florida; certainly in the West Indies and Central America." (*Merrill.*)

34356 to 34359.

From Piracicaba, Brazil. Presented by Dr. Clinton D. Smith, director, School of Agriculture. Received October 7, 1912.

Quoted notes by Dr. Smith:

34356. GALIPEA MULTIFLORA (Nees and Mart.) Schultes. **Guamixinga.**

"The iron cleaner, a tree called here '*chupaferro.*'" Timber used for interior construction and boxes.

Description.—A tree found in the vicinity of Rio de Janeiro, in Brazil.

34357. ASPIDOSPERMA MACROCARPON Martius. **Guatambú.**

"An important commercial wood, the '*guatambú*', of which such things as rake and hoe handles are made. It has a large pod with flat, thin seed coverings."

Distribution.—The plains of the State of Minas Geraes in Brazil.

34358. ASPIDOSPERMA POLYNEURON Muell. Arg. **Peroba.**

"The most valuable wood commercially in this part of the State."

Distribution.—A tree found in the primeval forests of the State of Rio de Janeiro, in Brazil.

34359. FIRMIANA SIMPLEX (L.) W. F. Wight.
(*Sterculia platanifolia* L. f.)

"A tree of no great value, except to embellish parks. The leaves are not metamorphosed at all, yet bear on their margins little round fruits."

34360. ACTINIDIA CHINENSIS Planch. Yangtaw.

From Kuling, China. Presented by Rev. John Berkin. Received October 10, 1912.

See S. P. I. No. 21781 for description.

34361. VICIA VILLOSA Roth. Hairy vetch.

From Guelph, Canada. Presented by Prof. A. W. Mason, Ontario Agricultural Experiment Station, through Mr. H. N. Vinall, of the United States Department of Agriculture. Received October 10, 1912.

"A strain of hairy vetch developed by the Ontario Agricultural Experiment Station. This strain seeds heavily at Guelph and seems to be adapted to the humid conditions of the East." (*Vinall.*)

34362 and 34363. PHASEOLUS spp.

Presented by Walter W. Charter, Esq., Director of Agriculture, Quilimane, Portuguese East Africa. Received September 27, 1912.

"Seeds of '*Soroko*' grown in the Zambezi delta and much relished by the natives; also a variety of so-called Indian '*Soroko*' which is also grown here." (*Charter.*)

34362. PHASEOLUS AUREUS Roxb. **Mung bean.**

"Green seeded."

34363. PHASEOLUS MUNGO L. **Urd, or black gram.**

"Brown seeded."

34364. CARISSA CARANDAS L. **Carissa.**

From India. Presented by Mr. Alfred Bircher, of the Middle Egypt Botanic Gardens, Matania, Saff, Egypt. Received October 10, 1912.

"A thorny bush with small white flowers and black berries, good for sherbet making. The red juice, if not diluted with water, coagulates in a short time." (*Bircher.*)

34366. STERCULIA MACROPHYLLA Ventenat. **Bangilan.**

From Penang, Malay Peninsula. Presented by Mr. Wilson Popenoe, Altadena, Cal. Received October 14, 1912.

"A magnificent ornamental tree, native of the Malay Peninsula. It is a rapid grower, attaining an ultimate height of 50 feet or more, with oval leaves 10 to 12 inches long and 8 to 10 inches wide, slightly acute at the apex, dark green and sparsely hairy above, covered with a ferruginous tomentum below.

"The fruit is a 1 to 3 seeded capsule, about 2 inches in length and brilliant orange scarlet when ripe. These capsules are borne in the greatest profusion on panicles which hang down from every branch, and as the foliage is rather scant they produce a blaze of color which is visible some distance away. The oval black seeds, of a satiny luster, are exposed by the dehiscing of the capsules and add to the ornamental effect when near by.

"This would certainly be a great acquisition for such countries as Hawaii and Porto Rico, and possibly southern Florida and the most protected locations in southern California. Even when not in fruit the tree presents a very good appearance with its straight trunk and pyramidal head of foliage." (*Popenoe, in letter dated October 1, 1912.*)

Distribution.—A large tree found on the islands of the Malay Archipelago.

34367. CASSIA BEAREANA Holmes.

From East Africa. Presented by Rev. Pliny W. Keys, superintendent, Limpopo district Methodist Episcopal Mission, Inhamban. Received September 30, 1912.

"A small tree attaining 20 to 30 feet; leaves are about 8 to 10 inches long. The seeds are blackish brown, oval, and about seven-sixteenths of an inch in length." (*E. M. Holmes.*)

34368. CANARIUM OVATUM Engler. **Pili nut.**

From the Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science, Manila. Received October 14, 1912.

"The '*pili*' nut is locally very highly esteemed and is now being exported in considerable quantities. Treated exactly as salted peanuts are, the '*pili*' can not be surpassed as a table dish. The nuts are very hard and thick walled and rather difficult to crack. The local practice is to crack the nuts, then roast the seeds and remove the thin brown coating after roasting, as it is rather difficult to remove this coating from the fresh seeds." (*Merrill.*)

34378 and 34379.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received October 14, 1912.

34378. LILIUM sp. **Lily.**

"*Pah hoen* or *Pah huh.* This is said to have the power of rapidly restoring a run-down system. The outer parts are removed, and the inner softer ones have the epidermis peeled off, and then they are cooked and eaten with sugar. I have never eaten this and can not vouch for its qualities." (*Gee.*)

Bulbs.

34378 and 34379—Continued.

34379. COLOCASIA sp.

"*Eu nar.* This grows in a sandy soil, and under proper cultivation is sure to give a good crop. It is common in the market at this season, and is comparatively cheap." (*Gee.*)

Tubers.

34380. PELARGONIUM sp. **Rose geranium.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received October 15, 1912.

Cuttings.

34381 to 34409.

From Chile. Presented by Mr. Julio M. Foster, Santiago, who procured them from Mr. Adrian Sepuloeda, of the Ranch "San Fabian de Alico." Received October 7, 1912.

Quoted notes by Mr. Foster, except as indicated:

34381. NOTHOFAGUS DOMBEYI (Mirb.) Oersted. **Coihue.**
(*Fagus dombeyi* Mirb.)

(No. 1.) "A large and beautiful tree; useful as timber."

"Differs from *Nothofagus obliqua* and *N. procera* in appearance due to its persistent foliage of intense green. A majestic and elegant tree, the largest native Chilean tree. It does not need a strong fertile soil like the roble; its needs are more plebeian, and it may prosper in moist soils, unsuited for cultivation, thanks to the fact that the roots extend parallel to the surface of the soil, which gives it the strength to resist the blasts of a heavy wind. The wood replaces that of the roble [S. P. I. No. 34385] with perfect success when used in place of it." (*Castillo and Dey, Jeografia botanica.*)

Distribution.—A large tree found in the vicinity of Concepcion, in Chile.

34382. MYRTUS sp. **Luma.**

(No. 3.) "Very tall; of small diameter, compact; used for cart tongues."

34383. LITHREA CAUSTICA (Mol.) Hook. and Arn. **Litre.**
(*L. venosa* Miers.)

(No. 4.) "Remarkably hard; unsplittable; excellent for wagon hubs."

34384. NOTHOFAGUS OBLIQUA (Mirb.) Blume. **Gualo.**
(*Fagus obliqua* Mirb.)

(No. 5.) "Large tree, very hard."

34385. NOTHOFAGUS ANTARCTICA (Forst.) Oersted. **Roble.**
(*Fagus antarctica* Forst.)

(No. 6.) "Valuable timber for general use. Known as Chile oak."

"Grown in large numbers somewhat distant from the river courses and the center of population. Its height reaches 35 meters with a diameter of 4 meters. Sheds its leaves in winter. The wood varies with the nature of the soil; it is called hualle when it comes from the roble which has not formed heartwood, reserving the name pellin for the reddish and indestructible wood furnished by specimens which have grown in dry soil. The streets of the city of Valdivia were paved with this wood, and the railway ran over the sleepers of the same wood." (*Castillo and Dey, Jeografia botanica.*)

34381 to 34409—Continued.

34386. NOTHOFAGUS PROCERA (Poepp. and Endl.) Oersted. **Rauli.**
(*Fagus procera* Poepp. and Endl.)

(No. 7.) "Of large dimension and very valuable for furniture."

"Because of the value of its wood, which is used for the same purpose as the roble, the excessive exploitation has decimated this tree in the province of Valdivia. The wood of this tree is like that of the roble, red and compact, although of short life in contact with water. It is used for flooring and in carpentry and cooperage. Like the roble, the tree drops its foliage in winter." (*Castillo and Dey, Jeografia botanica.*)

Distribution.—A large forest tree growing on the slopes of the Andes, in Chile.

See No. 26324 for previous introduction.

34387. PERSEA LINGUE (R. and P.) Nees. **Lingue.**

(No. 8.) "Large dimension; bark very superior for tanning purposes."

"The hardiness which dominates in this plant favors a widespread distribution in the country. It grows prosperously in the vicinity of the sea and thence to a considerable altitude above its level, on the river banks and on the summits of bare arid mountains, in the stagnant meadows, and in the hot, stony deserts. The color of its wood varies from clear yellow to red and much resembles that of the caoba, on account of the beautiful veins which run through it, and in consequence of this beauty it is preferred for furniture, and in hydraulic works for its great resistance and duration. The tree also supplies the best tan bark of all our varied flora, bark which in Valdivia has given richness to one of the first and most flourishing industries. The leaves of the lingue are highly poisonous, and many animals pay for their avidity in eating them with their lives. Its fruits afford the food best liked by the wild pigeons, and give a bitter and repugnant flavor, which may be avoided by removing the crop of the bird when first killed." (*Castillo and Dey, Jeografia botanica.*)

34388. LAURELIA SEMPERVIRENS (R. and P.) Tul. **Laurel.**
(*L. aromatica* Juss.)

(No. 10.) "Large tree; good timber."

"This species owes its name, *aromatica*, to the fragrance of its leaves. It is a tree comparable to the roble (*Nothofagus obliqua*) for its size, but differs in the inferior quality of its wood, which, nevertheless, is used very largely because of the ease of working it and the abundance of the tree. In color it varies from the white of the poplar to the brown of cinnamon, sometimes having a lemon-yellow and an olive tint alternating in the same piece. Has the disadvantage that it splits and frequently warps, due to the large amount of sap it contains, which is retained on account of the poor selection of the period of cutting." (*Castillo and Dey, Jeografia botanica.*)

34389. CRYPTOCARYA RUBRA (Mol.) Skeels. **Peumo.**
(*C. peumus* Nees.)

(No. 11.) "Large tree; edible fruits."

34390. GEVUINA AVELLANA Molina. **Avellano.**

(No. 12.) "Good size tree; good timber; abundant nuts, like hazelnuts."

34391. EUCRYPHIA CORDIFOLIA Cav. **Palo santo.**

(No. 13.) "Large shrub with beautiful flowers in abundance."

34381 to 34409—Continued.

"Tree growing to 15 to 18 meters in height, with aromatic fugacious-petaled flowers which gradually change to all shades which lie between the white and the copper red, which predominates afterwards in the inflorescence up to the time of the fruit maturing. The sweetish sap is eagerly sought by many insects, which, establishing themselves in the tree, finally deposit their eggs in the bark, which when hatched give rise to injurious larvæ which bore into the wood, making it impossible to take advantage of its fine structure and beauty." (*Castillo and Dey, Jeografia botanica.*)

34392. (Undetermined.)

(No. 14.) "Large shrub with beautiful flowers in abundance and yielding edible fruit."

34393. PEUMUS BOLDUS Molina. **Boldo.**

(No. 15.) "Very large tree with superb foliage and contains medicinal properties used in treatment of liver trouble."

"A small ornamental evergreen tree, with exceedingly hard wood, which is utilized for many kinds of implements. The bark furnishes dye material. The fruits are of aromatic and sweet taste." (*F. von Mueller, Select Plants.*)

34394. (Undetermined.)

(No. 17.) "Large shrub producing abundant berries good for cider."

34396. SOPHORA sp. **Pilo.**

(No. 19.) "Large tree, useful for wagon spokes."

34397. MAYTENUS BOARIA Molina. **Maiten.**

(No. 20.) "Large and beautiful ornamental tree."

"Reaches a height of 12 meters but of small diameter; this tree is without doubt the most beautiful of all native Chilean trees in foliage, which is tremulous, waving in the lightest breeze. Its leaves, of great value for forage, are sought eagerly, like those of the weeping willow, by hungry cattle. There are varieties of the tree which furnish wood finely veined with reddish and olive tints." (*Castillo and Dey, Jeografia botanica.*)

34399. SOPHORA MACROCARPA Smith. **Mayo.**

(No. 23.) "Flowering shrub."

34400. KAGENECKIA OBLONGA Ruiz and Pavon. **Guayo.**

(No. 24.) "Flowering shrub."

"This tree, known in Chile as *Lyday*, furnishes a wood used for building purposes, while the leaves, being very bitter, are used by the inhabitants to cure intermittent fever." (*A. A. Black, in Lindley, Treasury of Botany.*)

34401. (Undetermined.)

(No. 25.) "Shrub affording good forage for browsing"

34402. ESCALLONIA MYRTOIDEA Bertero. **Lum.**
(*E. arguta* Presl.)

(No. 26.)

Description.—A shrub found along streams in the vicinity of Rancagua, in Chile.

34403. ESCALLONIA PULVERULENTA (R. and P.) Persoon. **Mardroña.**

(No. 27.)

Distribution.—A shrub growing in the vicinity of Concepcion, Chile.

34404. (Undetermined.) **Chuplin.**

(No. 28.) "Flowering shrub."

34381 to 34409—Continued.

34405. ESCALLONIA REVOLUTA (R. and P.) Persoon. **Siete camisas.**

(No. 29.) "Flowers very beautiful."

"In Valdivia is frequently called *siete camisas* (seven shirts). It is scarce in the central valley of Chile, but frequent in the Cordillera of Santiago. In Valdivia it grows in moist soils preferably and rarely reaches a height of 5 meters, sending out branches from the base of its slender trunk. Its light soft wood is used only for fuel. (*Castillo and Dey, Jeografia botanica.*)

Distribution.—A shrub with racemes of white flowers found in the vicinity of Concepcion, in Chile.

34406. MELADENDRON CHILENSE Molina. **Palo negro.**

(No. 30.) "Large black tree."

34407. QUILLAJA SAPONARIA Molina. **Quillai.**

(No. 31.) "Soap tree, very large. This is a very valuable tree and should grow well in many parts of the United States."

34408. CHUSQUEA sp. **Bamboo.**

(No. 32.)

34409. LAPAGERIA ROSEA Ruiz and Pavon. **Copigue.**

(No. 33.) "Climbing vine; very rich flower."

34412. MANGIFERA INDICA L. **Mango.**

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Agricultural Experiment Station. Received October 15, 1912.

"*Oahu.* Nearly seedless." (*Wilcox.*)

34413. PARTHENIUM ARGENTATUM A. Gray. **Guayule.**

From Saltillo, Mexico. Presented by Mr. Philip E. Holland, American consul. Received October 15, 1912.

"The plant grows along the northern frontier of Mexico, especially in dry and mountain lands. It reaches an average height of 25 inches, weighs about 20 ounces, and its average thickness at the base is 1½ inches. In proportion to its size, each plant yields 10 per cent of pure rubber. The Mexican guayule does not produce the same milky sap common to other rubber plants.

"Scarcely any industry in Mexico has experienced so rapid a development as that of guayule rubber. Since its appearance in the market its price has advanced amazingly. In 1903 it sold for $5 to $7 per ton; only four years later, in 1907, the price had risen to $50 per ton, and to-day (1911) its value is approximately $100 per ton.

"The most valuable guayule plantations are found in the vast desert of Coahuila, a State whose wealth was made fabulous by guayule production. The States of Nuevo Leon, Chihuahua, and Tamaulipas also produce guayule in large quantities." (*Extract, Bul. Amer. Rep., 1911.*)

34414. PRUNUS HUMILIS Bunge.

From Chevy Chase, Md. Presented by Mr. David Fairchild, of the Bureau of Plant Industry, U. S. Department of Agriculture. Received October 17, 1912.

"Seeds collected from a plant presented by the Arnold Arboretum and grown in Maryland since 1906. A remarkable ornamental free and early flowering plum. Its dwarf habit makes it suited for cultivation about city houses in dooryard plantings. Prof. C. S. Sargent informed me that the seed from which this plant came he bought of a fruit vendor at a railway station between Tientsin and Peking." (*Fairchild.*)

Distribution.—The provinces of Chihli and Shantung, in China.

34415. BERBERIS VULGARIS L. **Barberry.**

From Sherborn, Mass. Presented by Miss Martha L. Loomis. Received October 15, 1912.

"A barberry found growing wild here which bears seedless fruits." (*Loomis.*)

34416. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

From Cabanas, Cuba. Presented by Mr. S. H. Carnahan. Received October 5, 1912.

"Last year I found a few plants of what was to me a new bean. The plant is small, 4 to 10 inches tall, with yellow blossoms, but the pods set on more like a cowpea than like a white soy bean of the north. They roast nicely and make a good cereal coffee; also seem to cook as a soup bean, except a little slow to soften." (*Carnahan.*)

"These are much employed in Japan for human food. The commonest method of eating them is to make a meal from the beans, from which cakes and confections of various kinds are made." (*C. V. Piper.*)

34417. ACROCOMIA sp.

From South America. Presented by Mr. Thomas R. Gwynn, Horqueta, Paraguay. Received October 14, 1912.

"*Mbocata* (coco). The coco, from the root up, is most valuable; when it is very young, the roots, so the natives tell me, can be used as mandioca; when matured, from a foot or two above the roots toward the bud of the plant makes excellent starch, just as good as that furnished by the mandioca plant; besides, this part of the plant is a nourishing food, without any preparation, for all kinds of live stock and fowls. The leaves make the best kind of thread and twine, and woven roughly by hand the Indians make hammocks that for endurance are par excellence.

"The coco, like all the family of palms, has a long, straight body, sometimes 80 feet in height, and from its tip top sends out its long, feathery, waving leaves. The fruit is formed from the base of the leaves and resembles huge bunches of grapes in shape. From two to four bunches are furnished every year from a single tree. Another thing, the oil from the kernel is better than any olive oil to be found in this country, and the soap is equal to any in use for the toilet. The one drawback is the thorns on the stems of the leaves and on the trunk of the tree. Sometimes, however, the trunks are entirely free from thorns, especially when very tall and in full vigor. The leaves also give food to stock, and in droughts, when pasture fails, the natives fell the trees for their horses and cattle and split open the trunks, that the cattle may eat the pith." (*Gwynn.*)

34418. PSIDIUM GUAJAVA L. **Guava.**

From Dehra Dun, India. Presented by Miss Louisa M. Kelso, American Presbyterian Mission. Received October 21, 1912.

These seeds were procured at the suggestion of Mr. Charles F. Morrison, Apopka, Fla.

"I saw these trees growing in the compound of the American Presbyterian Mission, Dehra Dun, United Provinces, India, in 1882. The tree has a single trunk, which attains a height of 15 to 20 feet and is very prolific. It is perfectly hardy in that climate. Thin ice forms in the open every winter. Practically the entire annual rainfall, 140 inches, falls in three months.

"This is the finest eating guava I have ever seen and makes jelly equal to any other. The fruit is yellow, smooth, thin skinned, and elongated, not spherical, slightly larger than the yellow Cattley guava. The seeds are in a small spherical mass at the center, leaving a large quantity of white pulp free from seeds." (*Morrison.*)

34419. RUBUS sp. **Raspberry.**

From Mokanshan, Shanghai, China. Presented by Rev. J. M. W. Farnham. Received October 5, 1912.

"This plant grows in the edge of a hedge or in a shady spot and in no respects resembles the raspberry bush. This thing is of no use in itself, bearing a very little fruit, resembling a raspberry in color, shape, and style, with a slightly acid taste. It might be of interest for hybridizing with the raspberry." (*Farnham.*)

34420. NYPA FRUTICANS Wurmb. **Nipa palm.**

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received at the Plant Introduction Field Station, Chico, Cal., October 15, 1912.

"This species grows only along the banks of tidal streams, where it is subject to overflow by brackish water. The plant is one of great importance in the Philippines, and most of the houses in the Archipelago are roofed with thatch made of the leaves. Commercially, however, its great value lies in its production of alcohol, of which enormous quantities are distilled annually from the fermented sap.

"I suspect that the species will grow in southern Florida and will certainly grow in most parts of the West Indies and Central America if planted in its proper habitat." (*Merrill.*)

34421. LANSIUM DOMESTICUM Jack. **Langsat.**

From Mindanao, Philippine Islands. Presented by Mr. Wilson Popenoe, Altadena, Cal. Received at the Plant Introduction Field Station, Chico, Cal., October 15, 1912.

For description, see S. P. I. No. 34496.

34422. ABROMA AUGUSTA (L.) L. f.

From Calabar, Southern Nigeria, Africa. Presented by Mr. Frank Evans, Superintendent of Agriculture. Received September 28, 1912.

A large open bush widely distributed throughout the hot, moist portions of India, now cultivated in Africa. The bark affords a strong white bast fiber, which is easily separated by retting in water or by decortication. It is readily propagated by cuttings and may be made to yield annually two or three crops of shoots from 4 to 8 feet long, but requires rich land and plenty of moisture. The fiber, which is said to be stronger than sunn hemp, is strong, white, and clean, and is chiefly used for cordage by the natives. (*Adapted from Watt, Commercial Products of India, and Dodge, Useful Fiber Plants.*)

Distribution.—A shrub found in the warmer parts of India and eastward to China and the Philippines.

34423. ALEURITES FORDII Hemsley. **Wood-oil tree.**

From Biloxi, Miss. Presented by Mr. Aristide Hopkins. Received October 22, 1912.

"These nuts were procured from a tree sent out from the Office of Foreign Seed and Plant Introduction under S. P. I. No. 21013. The nuts are all very large size, and most of them contain eight seeds or kernels instead of five, as in the ordinary form.

"We believe that this is either a seed or a bud variation." (*P. Bisset.*)

For an illustration of the male blossoms of the wood-oil tree, natural size, see Plate I.

MALE FLOWERS OF THE TUNG-SHU, OR CHINESE WOOD-OIL TREE (ALEURITES FORDII).
(S. P. I. NOS. 34423 AND 34438.)

These flowers are white, with yellowish throats turning to red, and the tree when in full bloom is almost as ornamental as a catalpa. The chief interest attached to these flowers is their significance as showing the adaptability of the wood-oil tree for cultivation in northern Florida. The tree bearing these flowers stands on the property of Mr. W. H. Raynes, at Tallahassee, Fla. It bore two bushels of fruit last season. Pendent cluster, photographed by Mr. David Fairchild, Tallahassee, Fla., April 2, 1914. (Natural size.)

MANGO OF THE DIVINE VARIETY IN FRUIT AT THE UNITED STATES PLANT INTRODUCTION FIELD STATION, MIAMI, FLA.
(S. P. I. NOS. 34444 AND 34445.)

This variety was introduced from Trinidad, British West Indies, in 1907. It has proved to be a vigorous grower and is now in fruit for the first time. It is one of the few named varietes cultivated in the French West Indies, and is reported unusually free from fiber. Photographed by Mr. Edward Simmonds, Miami, Fla., May, 1914.

34424 and 34425.

From Venezuela. Presented by Mr. Elio J. Burguera, Tovar, Merida, through the American consul, Maracaibo. Received October 17, 1912.

34424. HORDEUM VULGARE L. **Barley.**

34425. TRITICUM AESTIVUM L. **Wheat.**
(*T. vulgare* Vill.)

34426 and 34427. ZEA MAYS L. **Pop corn.**

From Granada, Spain. Procured through Mr. W. T. Swingle, of the Bureau of Plant Industry, January, 1912. Received October 23, 1912.

34426. (Ear No. 1.) **34427.** (Ear No. 2.)

"A variety of pop corn with red pericarp, many of the seeds with purple aleurone. Plants grown from the two ears secured by Mr. Swingle in the season of 1912 produced from one to four well-formed ears per stalk. The plants possess the peculiar characteristic of producing the silk before the pollen of the same plant is shed, thus affording a natural means of avoiding self-pollination." (*G. N. Collins.*)

34429 and 34430. **Tree fern.**

From Colombo, Ceylon. Presented by Mr. C. K. Moser, American consul, who received them from the curator of the Hakgala Gardens, Newara Eliya. Received October 21, 1912.

34429. ALSOPHILA CRINITA Hooker.

"A native Ceylonese species very rarely in cultivation." (*Moser.*)

34430. HEMITELIA sp.

Spores of this tree fern were received under the name *Hemitelia walkerae*, but the place of publication of this name has not yet been found.

34431. MANGIFERA VERTICILLATA Robinson. **Baúno.**

From the Philippine Islands. Presented by Mr. W. S. Lyon, Manila, who procured it through Mr. P. J. Wester, Bureau of Agriculture. Received October 26, 1912.

"A large tree sometimes exceeding 12 meters in height with a trunk 50 centimeters in diameter, growing in inundated regions in several parts of Mindanao, being particularly abundant around Butuan and in many places in the Agusan Valley and Davao and occurring also in the Sulu Archipelago. The baúno resembles the mango in habit and appearance, though it is somewhat more upright in habit, of sparser foliage, more gnarled, and less attractive in appearance. The leaves are 12 to 18 centimeters long, elliptical to lanceolate or oblanceolate, coriaceous, smooth, with a prominent midrib. The flowers are small, blue, and appear in terminal panicles like the mango. There is considerable variation in the appearance, size, and quality of the fruit on the numerous trees. The fruit of the best is somewhat larger than a Carabao mango, from 11 to sometimes exceeding 13 centimeters in length, with an equatorial diameter of 7 to 8 centimeters, oblong oval to pyriform; stem usually inserted obliquely in a more or less irregular sinus; stigmatic area depressed; surface smooth; color yellowish green; lenticels numerous, small; skin very thin and tender, adhering closely to the flesh; flesh white, very juicy, rich, subacid, quite aromatic, of excellent flavor, partaking somewhat of the flavor of apricot and soursop combined. The one seed is monoembryonic, large, and encased in matted coarse fibers that penetrate the flesh to a greater or less extent. The tree blooms in July and August, and the fruit ripens in August and September. The largest and best flavored baúnos

were obtained in Zamboanga; very good fruits were found in Davao and Butuan, and some that were very poor in Butuan and Surigao. The baúno is evidently very variable pomologically, and the trees also seem to differ greatly in productiveness. The excellent flavor of the baúno assures this fruit a place among the tropical fruits on a par with the mango as soon as a facile method of propagating the species asexually shall have been discovered, so that material of the best seedlings may be obtained and systematic breeding begun, reducing the fiber in the fruit. Botanically as well as horticulturally the baúno is a new fruit, having been named and described last year." (*Wester.*)

34432. CORDYLINE BANKSII Hook. f. **Palm lily.**

From North Island, New Zealand. Presented by Mr. D. Petrie, Epsom, Auckland. Received October 24, 1912.

"A fine, hardy, palmlike species." (*Petrie.*)

"Distinguished from *Cordyline australis* by its much longer leaves, 5 to 6 feet in length, and its drooping panicle of flowers." (*Laing and Blackwell, Plants of New Zealand.*)

Distribution.—A treelike liliaceous plant often 10 feet high, found in the northern and middle islands of New Zealand.

34433. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Puerto Bertoni, Paraguay. Presented by Dr. Moisés S. Bertoni, Estacion Agronomica. Received October 25, 1912.

34434 to 34436.

From Germany. Presented by Rev. J. B. Katzner, Collegeville, Minn. Received at the Plant Introduction Field Station, Chico, Cal., October 19, 1912. Numbered October 25, 1912.

Scions of the following:

34434 and **34435.** PRUNUS spp. **Plum.**

34434. Blue plum. **34435.** Large and prolific prune.

34436. PRUNUS CERASUS L. **Cherry.**
Sweet.

34437. MACADAMIA TERNIFOLIA F. Muell. **Queensland nut.**

From Sydney, New South Wales. Purchased from Anderson & Co. Received at the Plant Introduction Field Station, Chico, Cal., October 21, 1912.

For description, see S. P. I. No. 18382.

34438. ALEURITES FORDII Hemsley. **Wood-oil tree.**

From Cairo, Ga. Presented by Mr. J. B. Wight; produced by trees sent him under S. P. I. No. 21013, March, 1908. Received October 30, 1912.

For an illustration of the male blossoms of the wood-oil tree, natural size, see Plate I.

34439. STIZOLOBIUM sp.

From Coimbatore, India. Presented by Mr. D. Hooper, economic botanist, Botanical Survey of India Department, Calcutta, India. Received October 30, 1912.

"This seed was sent in under the name *Kakkavalli*, but that name has not heretofore been applied to the Stizolobium species.

"While the plants resemble the Florida velvet bean very closely, they are not suitable for forage, owing to the trouble caused by the stinging hairs." (*C. V. Piper.*)

34440 to 34454. MANGIFERA INDICA L. **Mango.**

From Trinidad, British West Indies. Presented by Mr. W. B. Freeman, Assistant Director of Agriculture, Port of Spain. Received October 29, 1912.

Six cuttings of each of the following:

34440. *Julie Martinique.*
34441. *Madame.*
34442. *Neelum.*
34443. *Amelia Martinique.*
34444. *Mistake Divine.*
34445. *Divine Martinique.*
34446. *Minnie.*
34447. *Salem.*
34448. *Chinois Martinique.*
34449. *Julie Leotaud.*
34450. *Martin.*
34451. *Walajah Pasand.*
34452. *Tamancha.*
34453. *Bombay Special.*
34454. *De Boissière.*

For an illustration of a mango tree of the Divine variety (S. P. I. No. 21516) in fruit, see Plate II.

34455 to 34470.

From Lucknow, India. Presented by Mr. Wilson Popenoe, Altadena, Cal. Received October 26, 1912.

Quoted notes by Mr. Popenoe:

34455 to 34457.

34455. AMARANTHUS MANGOSTANUS Juslenius. **Amaranth.**

"*Chaulai Sag.*"

Distribution.—Throughout India and Ceylon in cultivated ground; used as a potherb.

34456. PORTULACA OLERACEA L. **Purslane.**

"*Kulfa Sag.*"

34457. AMARANTHUS GANGETICUS L. **Amaranth.**

"*Lal Sag.*"

"A tall, soft-wooded annual, extensively cultivated throughout India for the sake of the leaves, which are used in the same manner as spinach."

Distribution.—Throughout the Tropics; cultivated as a potherb in India.

34458. BENINCASA HISPIDA (Thunb.) Cogniaux. **Wax gourd.**
(*B. cerifera* Savi.)

"'Petha.' A climber, annual, with a large pumpkinlike fruit, smooth when ripe, and covered with a waxy bloom. It is quite common around Seharunpur. When in a young state the fruits form an ingredient of vegetable curries, but their principal use is for making a sweetmeat which greatly resembles 'Turkish delight.' When cooked and used as a vegetable the fruits are rather tasteless."

34459 to 34462. CITRULLUS VULGARIS Schrad. **Watermelon.**

34459. *Early Lucknow.*
34460. *Farrukhabad.*
34461. "Red, bottle shaped, from Shahjehanpur."
34462. "Round, black-red, from Seharunpur."

34463. CUCURBITA PEPO L. **Pumpkin.**

"'*Kaddu*,' common variety. The pumpkin is one of the commonest of Indian vegetables."

34455 to 34470—Continued.

34464. CUCUMIS MELO L. **Muskmelon.**

"'*Kakri*,' '*Phoot*' variety. This is a variety of the common melon, with long cucumberlike fruits. When in a young state they are covered with soft downy hairs and are of a pale-green color, changing to yellow when ripe. When young they are eaten raw like cucumbers, which they greatly resemble. When ripe they are eaten as a melon, but are said to be of very poor flavor."

34465. ABELMOSCHUS ESCULENTUS (L.) Moench. **Okra.**
(*Hibiscus esculentus* L.)

"'*Bhindi torai*,' '*Nasik*.' Soft variety. One of the best varieties of okra."

34466. HIBISCUS SABDARIFFA L. **Roselle.**

"'*Patwa*.' This is the red-stemmed variety, of which the calyxes are dark red, and is considered the best."

34467. LUFFA CYLINDRICA (L.) Roemer. **Loofah gourd.**
(*L. aegyptiaca* Miller.)

"'*Ghiya torai*.' An annual of climbing or trailing habit, resembling the common luffa gourd, *L. acutangula*. The smooth cylindrical fruit is a foot long, sometimes even more, and when immature is considered a very good vegetable."

34468. MOMORDICA CHARANTIA L. **Carilla.**

"'*Karela*.' Rainy-season variety. A slender climbing or trailing annual. Fruit is from 5 to 7 inches long, oblong, warty or tubercled on the surface, dark green when young, changing to orange when ripe. When prepared in a vegetable curry, the manner in which it is commonly used, the fruit possesses an agreeable bitterness. It should be grown on a trellis."

Distribution.—Throughout India, and generally cultivated in the Tropics.

34469. CITRULLUS VULGARIS Schrad. **Watermelon.**

"*Tinda*."

34470. LUFFA ACUTANGULA (L.) Roxburgh. **Loofah gourd.**

"*Arrow torai*."

Distribution.—Generally cultivated in the Tropics.

34471. PANAX QUINQUEFOLIUM L. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From Songdo, Chosen (Korea). Purchased from Mr. J. Arthur Thompson, through Mr. George L. Shaw, of Manchuria. Received November 1, 1912.

34472. FERONIELLA LUCIDA (Scheff.) Swingle. **Kawis.**

From Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture, Saigon. Received November 4, 1912.

See S. P. I. No. 25888 for description.

34473. ASPARAGUS FILICINUS Hamilton. **Asparagus.**

From India. Presented by Mr. Norman Gill, superintendent, Kumaun Government Gardens, Jeolikote, United Provinces. Received November 4, 1912.

34474. ALEURITES MOLUCCANA (L.) Willd. **Lumbang.**
(*A. triloba* Forst.)

From Costa Rica. Presented by Mr. A. Alfaro, director, Garden of the National Museum, San Jose. Received November 4, 1912.

"Tree 10 meters high, 60 centimeters in diameter." (*Alfaro.*)

34475. ORYZA SATIVA L. **Rice.**

From Madagascar. Presented by Mr. Stuart R. Cope, London, England. Received October 25, 1912.

"*Tsimakata.* Dry mountain rice." (*Cope.*)

34476 to 34478.

From German East Africa. Presented by the Usumbwa Co., Usumbwa, Post Tabora. Received October 28, 1912.

Quoted notes taken from the Usumbwa Co.'s letter:

34476. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

"Grows here to a height of 6 to 9 feet, but takes from five to six months to ripen. The crop is enormous, and many different kinds of the plant are grown by the natives."

34477. ELEUSINE CORACANA (L.) Gaertn. **Ragi.**

"A quick-growing and much-planted grain of 1½ to 2 feet in height. The crop ripens in about three months."

34478. CASTALIA STELLATA (Willd.) Salisbury. **Water lily.**
(*Nymphaea stellata* Willd.)

"Known as the 'sweet-scented blue lotus.' The flowers measure 3 to 4 inches across and are of a light-blue color with yellow center."

Distribution.—In rivers, lakes, and ponds in extratropical Africa and in India.

34479 to 34481. ROSA spp. **Rose.**

From Erfurt, Germany. Purchased from Haage & Schmidt. Received November 6, 1912.

Ten cuttings each of the following:

34479. ROSA DAMASCENA TRIGINTIPETALA (Dieck) Koehne.

"A single-flowered strong-growing form of *Rosa gallica* var. *damascena* grown in Bulgaria for perfume purposes." (*W. Van Fleet.*)

34480. ROSA GALLICA L.

"*Byzantina.* Double-flowered dwarf form, cultivated for perfume purposes in Bulgaria, France, and Germany." (*W. Van Fleet.*)

34881. ROSA GALLICA L.

Conditorum. This was received as *Rosa conditorum*, which seems never to have been published as a species.

"Double-flowered dwarf form, cultivated for perfume purposes in Bulgaria, France, and Germany." (*W. Van Fleet.*)

34482. PRUNUS FRUTICOSA Pallas. **Cherry.**
(*P. chamaecerasus* Jacq.)

From Omsk, Siberia. Presented by Mr. A. F. Reinecke, American consular agent. Received October 31, 1912.

See S. P. I. No. 32224 for previous introduction.

34484. CITRULLUS VULGARIS Schrad. **Watermelon.**

From the Union of South Africa. Presented by Mr. J. Burtt Davy, Department of Agriculture, Pretoria. Received November 7, 1912.

"*Tsama melon.* Collected in the heart of the Kalahari Desert. It is one of the most useful desert plants, being the sole source of water supply for cattle trekking through the desert in the dry winter months; animals which are eating the melons do not seem to require any water. When the water supply of travelers gives out, the moisture is extracted from these melons for drinking purposes and is often used by humans." (*Davy.*)

34485 to 34488.

From Australia. Presented by Mr. J. A. Hamilton, Tolga, Queensland. Received November 7, 1912.

Quoted notes by Mr. Hamilton:

34485 to **34487.** EUCALYPTUS spp. **Eucalyptus.**

"All useful and ornamental trees."

34485. EUCALYPTUS sp.

"Bloodwood."

34486. EUCALYPTUS sp.

"Grows 3,000 feet above sea level. Latitude 17° 30′ south."

34487. EUCALYPTUS SIDEROPHLOIA Bentham.

"Black ironbark. Tropical variety."

34488. XANTHORRHOEA sp. **Grass-tree.**

"This is not only ornamental, but a valuable resin can be obtained from it, which is used for varnish. It ought to do very well in your Southern States; the poorer the soil the better, so long as it gets the heat."

34489 and 34490. ELEUSINE CORACANA (L.) Gaertn. **Ragi.**

From Mysore, Bangalore, India. Presented by Mr. H. V. Krishnayya, acting officer in charge of the Agricultural Department. Received November 7, 1912.

Quoted notes by Mr. Krishnayya:

34489. "*Kar.* Sown in May and harvested in September. Also grown under irrigation."

34490. "*Hullubilé.* Sown in July and harvested in November. Grain considered to be the best of all varieties."

34491 and 34492. IPOMOEA CALOBRA Hill and Mueller. **Calobra.**

From Australia. Presented by Prof. Manson Bailey, Department of Agriculture, Brisbane, Queensland. Received November 7, 1912.

"A native convolvulus known by the natives of the Barcoo in Queensland under the name of '*Calobra*,' and by the natives of the Moonie and Balonne Rivers as '*Weir*.' It is a tall twiner with a somewhat turnip-shaped tuber. The leaves are heart shaped, somewhat oblong, and often measure 4 inches in breadth. The flower is nearly 3 inches broad, is reddish at the center, and paler toward the outside. The seed capsule is egg shaped, going to a point about 1 inch long and containing four seeds. The seeds are dark brown and about one-half inch long. The plant, which is of the sweet-potato family, is to be found in the Mulga shrubs." (*Bailey, in letter of September 28, 1912.*)

34491. Seeds.

34492. Tubers.

34493. CUDRANIA TRICUSPIDATA (Carr.) Bureau. **Che.**
(*Maclura tricuspidata* Carr.)

From Augusta, Ga. Secured by Mr. Peter Bisset, of the Office of Foreign Seed and Plant Introduction, from P. J. Berckman's Co. Received November 11, 1912.

"These fruits are from one of Mr. Wilson's introductions; an edible fruit, allied to the Maclura (*Toxylon pomiferum*), or Osage orange." (*Bisset.*)

"Apparently this fruit will thrive down South, and it is, as you say, both interesting and beautiful. In China it occurs throughout the Yangtze Valley, from river level to 3,000 feet altitude. It varies from a small, much-branched, thorny bush to a tree 40 to 50 feet high. The fruits are eaten by the Chinese, but are not much esteemed. In Szechwan the leaves are used for feeding young silkworms, it being claimed that worms thus fed produce a superior kind of silk to those fed upon mulberry leaves alone. The plant is exceedingly common and by no means new, but I believe with you that there is a future for it in this country as a hedge plant or ornamental tree, if nothing else." (*E. H. Wilson.*)

Distribution.—The provinces of Shantung, Kiangsu, Chekiang, Kiangsi, Hupeh, and Kwangtung; and in the islands of the Korean Archipelago.

34494 to 34496.

From Singapore, Straits Settlements. Presented by Mr. Wilson Popenoe, Altadena, Cal. Received November 8, 1912.

Quoted notes by Mr. Popenoe, except as indicated:

34494. NEPHELIUM LAPPACEUM L. **Rambutan.**

"The rambutan is one of the commonest and at the same time most palatable fruits of the Malay Peninsula. Trees are to be seen in almost every garden in both Singapore and Penang, and in its season the fruit is hawked everywhere in the streets. The tree grows to a height of about 40 feet, and when in fruit is a handsome sight, the terminal clusters of bright crimson fruits being produced on every branch. The compound leaves are made up of oblong-ovate leaflets, about 4 inches in length and 1½ inches in width. In habit of growth the tree appears to be normally rather round topped and spreading, but as it is frequently planted among numerous other trees it is forced to grow tall and slender, branching only at a considerable height above the ground.

"According to Mr. J. D'Almeida Pereira, of Singapore, there are eight or ten varieties of the rambutan, the difference being in form and coloring. The natives, however, do not distinguish between any of these varieties. He considers the '*Atjense*' variety, which he has propagated by grafting, to be the finest, as it is the sweetest in flavor and the pulp does not adhere to the seed as closely as in most varieties. From his description of this form it would appear that it is nothing less than the species *Nephelium mutabile*, which, although of distinctive appearance from the rambutan, seems to be considered by all the natives as merely a variety of the latter. Among the varieties of the true rambutan the differences do not seem to be very well marked or of great importance. In appearance a cluster of rambutans, when highly colored, is exceptionally attractive. The best forms attain, when fully ripe, a rich crimson color, while the poorer ones are greenish or yellowish, sometimes a combination of these two and lacking any tinge of crimson. The individual fruits are slightly smaller than a hen's egg, but more elongated in form; they are covered with soft spines about a half inch in length, and are borne in clusters of varying size, but rarely containing more than 10 or 12 fruits. The pericarp

34494 to 34496—Continued.

is not thick or tough, and to eat the fruit the basal end is usually torn off, exposing the aril, which, with a slight pressure on the apical end of the fruit, slides into the mouth. The flavor is mildly subacid and somewhat vinous, pleasant, but rather lacking in character. An oblong, flattened seed is inclosed in the aril.

"General form oblong elliptical; weight averaging about 1 ounce; length 1⅝ inches, breadth 1⅛; base rounded or slightly tapering; apex rounded or slightly tapering; stem slender, short; peduncle 8 to 10 inches long, woody, medium stout, bearing three to ten fruits; surface covered with slender, soft, fleshy spines under 1 inch in length; color rich crimson or crimson maroon, yellowish when not fully ripe; pericarp one-sixteenth to one-eighth of an inch thick, firm, greenish; aril whitish, transparent, about one-fourth inch thick, meaty, very juicy; seeds, one, large, oblong, compressed, pointed at the apex, the aril adhering to it closely; flavor subacid, vinous, pleasant."

34495. BACCAUREA MOTLEYANA Muell. Arg. **Rambe.**

"A tree of rather large size, native of the Malay region, and commonly planted in gardens in Singapore and Penang. It forms a dense umbrageous head of foliage and is of very symmetrical growth. The leaves are oval, entire, dark green in color, about 6 inches in length and 4 inches in breadth. The fruit, which is produced in great profusion in long pendent clusters on the old wood, may be described as follows: General oval form, sometimes slightly elliptical; average weight, three-fourths of an ounce; length, 1 to 1¼ inches; breadth, three-fourths to seven-eighths of an inch; base rounded or tapering almost imperceptibly; cavity none; apex rounded or tapering slightly, basin none; calyx persistent in the form of three linear-lanceolate brownish sepals, which frequently drop off when the fruit is handled; stem medium, stout, short; panicle sometimes 12 inches long, bearing from five to ten fruits; surface smooth, covered with a thin grayish tomentum; color light straw, with occasional small patches of russet; skin one-eighth to one-fourth inch in thickness, of tough, leathery texture; pulp whitish, translucent, soft, melting, very juicy; seeds normally three, but one or two of them frequently abortive or imperfectly developed, oval to elliptical, somewhat compressed and grooved, and of rather large size; flavor subacid, resembling that of a fully ripe gooseberry, pleasant; season, August to September. It is one of the commonest fruits in the Penang markets. It does not seem to be esteemed by Europeans, however, and can not be considered to possess more than ordinary merit."

34496. LANSIUM DOMESTICUM Jack. **Duku.**

"There are two distinct forms of this species, the langsat, or lanzon, as it is known in the Philippines, and the duku, or doekoe. The duku, the larger and better of the two, is one of the finest of the Malayan fruits. Although not equal to the mangosteen or so popular among the natives as the rambutan, it is a common tree in gardens and along the roadsides, and the fruit is common in the markets. The duku does not appear to occur in the Philippines, although the langsat is said to be common in the southern islands. In the Federated Malay States, however, it is much more popular than the langsat. The normal form of the duku is spherical; although fairly uniform in shape, there is much difference in the size of the fruits, the smallest being not over an inch in length, while the largest are over 2 inches. The skin is slightly furrowed longitudinally, is a dull brownish yellow in color, and covered with grayish tomentum. The skin is quite thick and, although tough and leathery, is readily peeled off, exposing the whitish, translucent flesh, divided into five segments resembling the cells

34494 to 34496—Continued.

of an orange, but more easily separated. A small amount of intercellular tissue is usually present, and this must be carefully removed before the fruit is eaten, as it has an intense and disagreeable terebinthine flavor. Three or four of the cells will be found to contain no seeds, or at least only rudimentary ones, and can be eaten entire; the one or two cells which contain perfect seeds are usually larger than the rest, and the pulp adheres to the seed quite tenaciously. They are more difficult to handle. The flavor of the pulp resembles that of no temperate fruit; it is subacid or sometimes rather acid, aromatic, and very pleasant unless one happens to obtain a specimen not fully ripe, in which case there is a strong taste of turpentine; like most other Malayan fruits, however, this one has not become popular with Europeans. The duku is produced in small terminal clusters containing from two to five fruits. As the individual fruits do not ripen at the same time, they are picked separately, with the result that one rarely sees clusters of the fruit in the market.

"General form spherical, sometimes slightly oblate; weight averaging about 2 ounces; length 1 to 1⅞ inches, thickness 1¼ to 2¼ inches; base slightly furrowed near the stem, rounded or sometimes tapering almost imperceptibly, cavity none; apex slightly flattened, stigmatic point a prominent, raised, brownish dot; calyx persistent, but usually remaining with the stem when the fruit is pulled from the tree; sepals five, small, dry, brownish; peduncle very stout and woody, covered with short, woolly hairs, bearing two to five sessile fruits; surface pubescent, sometimes slightly warty, covered with indistinct longitudinal furrowings; color dull, unattractive, brownish yellow, slightly darker near base; skin three-sixteenths of an inch thick, tough, leathery, separating readily from the flesh; cells five—two, three, or four imperfectly developed and containing only abortive seeds; seed coats membranous; flesh whitish, translucent, melting, very juicy; seeds one or two, perfectly developed, of variable size, oval, flattened, and somewhat irregular in outline; flavor subacid, much superior to that of the langsat. The langsat varies from the above description in being oval, produced in large clusters, and having a much thinner skin, by which characters it can be immediately distinguished. It is fully described as follows: General form oval to roundish oval; weight averaging not more than 1 ounce; length 1 to 1½ inches, thickness ¾ to 1¼ inches; base rounded, cavity none; apex rounded, crowned by a hard, short, brownish point; calyx persistent, sepals five, small, brownish; peduncle medium stout, woody, covered with short hairs, and bearing 5 to 20 sessile fruits; surface slightly wrinkled longitudinally; tomentose; color dull brownish yellow, slightly darker near the base; skin rather tough, thin, and leathery, separating readily from the flesh; cells five—two, three, or four imperfectly developed and containing only abortive seeds; flesh whitish, translucent, melting, juicy; seeds, one or two perfectly developed of variable size, oval, flattened, sometimes rather irregular in outline, seed coats membranous; flavor subacid, not very agreeable, as it is somewhat terebinthine.

"During its season the langsat is quite common in the Manila markets and sells at a good price. A cluster of the fruits looks not unlike a cluster of loquats, except in the less attractive color.

"It is a medium-sized, rather slender tree, native of the Malay Archipelago. The compound leaves are made up of six or eight oblong-lanceolate glabrous leaflets about 4 inches in length and 1½ inches in breadth, the petiole very short. Except in the difference in the size of the fruit clusters, the two forms are, as far as could be ascertained, practically the same in characters of growth and foliage."

34494 to 34496—Continued.

"Dr. B. T. Galloway, during his brief visit in Java in 1910, was much impressed with the possibilities of this fruit. These impressions agreed with my own made in 1896 and led us to request Mr. Popenoe to make a special examination of its culture in the East Indies." (*Fairchild.*)

For illustrations showing the fruits of the duku (doekoe) and the langsat, see Plates III and IV. See S. P. I. No. 34421 for the introduction of the langsat.

34497 to 34514.

From Seharunpur, India. Presented by Mr. Wilson Popenoe, Altadena, Cal. Received November 4, 1912.

Quoted notes by Mr. Popenoe:

34497. AMARANTHUS GANGETICUS L. **Amaranth.**

"*Marsa sag.* Cultivated for the sake of its leaves, which are used like spinach."

34498. CANAVALI GLADIATUM (Jacq.) DC. **Sword bean.**

"*Bara sem.* The young pods of this plant are eaten and are acceptable, as they are obtainable at a season when other vegetables are scarce."

34499. CUCUMIS SATIVUS L. **Cucumber.**

"*Khira.* Long green variety. One of the best of the local cucumbers."

34500. CUCUMIS SATIVUS L. **Cucumber.**

"*Khira.* Small round green variety."

34502. LAGENARIA VULGARIS Ser. **Gourd.**

"*Alkada* or *lauka.* Mixed varieties. The gourd is cultivated for its fruits, which are used as a vegetable when about half grown."

34503. LUFFA ACUTANGULA (L.) Roxburgh. **Loofah gourd.**

"*Kali torai.* Rainy-season variety."

34504. LUFFA ACUTANGULA (L.) Roxburgh. **Loofah gourd.**

"*Kali torai.* Hot-season variety. Similar in growth to S. P. I. No. 34505, but with ribbed fruits."

34505. LUFFA CYLINDRICA (L.) Roemer. (*L. aegyptiaca* Miller.) **Loofah gourd.**

"*Ghiya torai.* Common long variety."

34506. LUFFA CYLINDRICA (L.) Roemer. (*L. aegyptiaca* Miller.) **Loofah gourd.**

"*Ghiya torai.* White seeded. An annual climber with smooth cylindrical fruit a foot long or more, but edible only when about half grown."

34507. MOMORDICA CHARANTIA L. **Carilla.**

"*Karela.* Common large. A slender climbing or trailing annual, with oval, warty fruits 3 or 4 inches in length, green when young, orange red when ripe. They have a bitter taste and are used in curries."

34508. STIZOLOBIUM sp.

"*Purple sem.* An annual of twining habit. The immature seed pods are borne in clusters and eaten when about 6 inches in length. When cooked they are said to resemble, and to be almost equal to, the French bean."

34509. STIZOLOBIUM CINEREUM Piper and Tracy.

"*Tohar sem.* Very similar to S. P. I. No. 34508 and used in the same way."

THE DUKU, OR DOEKOE (LANSIUM DOMESTICUM, JACK), OF THE DUTCH EAST INDIES.

There are distinct forms of this species, the duku and the langsat. The duku, the larger and better of the two, is one of the finest Malayan fruits. The fruit is spherical, from 1 to 2 inches in diameter, dull brownish yellow in color, with a grayish tomentum The skin is quite thick, but easily removed, showing the five segments of whitish, translucent flesh, which is subacid, aromatic, and very pleasant. It is one of the best of the Javanese fruits, according to both Dr. B. T. Galloway and Mr. David Fairchild. The small terminal clusters contain from two to five fruits. Copied from a photograph by Mr. Wilson Popenoe, Singapore, Straits Settlements, 1912.

THE LANGSAT (LANSIUM DOMESTICUM, JACK). (S. P. I. No. 34496.)

This is the smaller of the two forms of this species, differing from the duku, or doekoe, in its thinner skin, larger clusters, and its oval fruit, the growth and foliage characters being practically the same. From a photograph by Mr. Wilson Popenoe, Penang, Straits Settlements, 1912.

34497 to 34514—Continued.

34510. PORTULACA OLERACEA L. **Purslane.**

"*Kulfa sag.* A dwarf creeping annual herb with fleshy leaves, which are sometimes used in salads, but more frequently boiled and served like spinach."

34511. SOLANUM MELONGENA L. **Eggplant.**

"*Banigan.* Long rainy-season variety. The eggplant seems to be especially adapted to the plains of central India, as it thrives there to perfection. The varieties cultivated, of which this is one of the best, appear to be of exceptionally good quality, although the size of the fruit is not large."

34512. TRICHOSANTHES ANGUINA L. **Snake gourd.**

"*Chachinda.* White variety. An annual of climbing habit. The long, cucumberlike fruits are picked when young, cut into strips, and served like French beans."

34513. TRICHOSANTHES ANGUINA L. **Snake gourd.**

"*Chachinda.* Black variety. Identical with S. P. I. No. 34512 except in the color of the fruits, which are dark instead of light green."

34514. VIGNA SESQUIPEDALIS (L.) Fruwirth. **Asparagus bean.**
(*Dolichos sesquipedalis* L.)

"Cuba or asparagus bean. An annual of climbing habit grown for its long pod, which when immature is served like the French bean. The pods when mature are 9 to 12 inches long."

34515. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. **Peach.**
(*Prunus davidiana* Franch.)

From Tientsin, China. Procured through Mr. Samuel S. Knabenshue, American consul general. Received at the Plant Introduction Field Station, Chico, Cal., November 9, 1912.

See S. P. I. Nos. 22009 and 27310 for descriptions.

34516. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. **Peach.**
(*Prunus davidiana* Franch.)

From Tientsin, China. Presented by Dr. Yamei Kin. Received at the Plant Introduction Field Station, Chico, Cal., November 9, 1912.

"*Shan t'ao*, the mountain wild peach. These seeds came from the Governmental Experimental Farm in Pao Ting Fu and vicinity. They must be planted in the autumn and allowed to be split by the frost so that they will germinate readily in the spring." (*Kin.*)

34517. CASTANEA sp. **Chestnut.**

From Tientsin, China. Procured through Mr. Samuel S. Knabenshue, American consul general. Received at the Plant Introduction Field Station, Chico, Cal., November 9, 1912.

"The Chinese wild species of chestnut (*Castanea mollissima* Blume) has shown indications at least of being more or less resistant to chestnut blight, and these may prove to be so, as they come from the same general region as those inoculated and tested." (*Fairchild.*)

34519. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

From Guadeloupe, French West Indies. Presented by Mrs. St. George Lough, at the request of Mrs. F. T. F. Du Mont. Received November 11, 1912.

See S. P. I. 34131 for description.

Scions.

34520. COLOCASIA sp.

From Yencheng, Kiangsu, China. Presented by Rev. Hugh W. White. Received November 11, 1912.

"A giant variety, here used as food. It is quite a good substitute for potatoes when prepared in an appetizing way. I presume the taro of the Pacific Ocean is similar, but have never seen it. Other parts of China raise it, but nowhere does it grow to such size as here." (*White.*)

"The corm received weighed about 1 pound, and a part of it when baked was white, of good flavor, and fine, mealy texture." (*R. A. Young.*)

34521. MALUS sp. **Apple.**

From Siberia. Presented by Mr. Svend Lange, Barnaul. Received November 6, 1912.

"Concerning these seeds, the farmer Sokoloff told me that most of the apple seeds after they were sown unless the trees were grafted rarely gave the same size fruits." (*Lange.*)

34522. UVARIA GRANDIFLORA (Lech.) Roxburgh.
(*U. purpurea* Blume.)

From the Philippine Islands. Presented by Mr. O. W. Barrett, Bureau of Agriculture, Manila. Received November 11, 1912.

"*Banauac.*—A shrubby climber related to the cherimoya, with bright-red, kidney-shaped fruits, about twice the size of a grape, in bunches of some 15 to 20, having edible subacid flesh containing numerous seeds. The plant is perhaps of little value for its fruit, but the fruiting plant is a good ornamental subject." (*Barrett.*)

Distribution.—The Province of Pegu, in Burma, and eastward through the Malay Archipelago to the Philippines.

34523 to 34601.

From Jamaica Plain, Mass. Collection of Chinese plants from the Arnold Arboretum. Received November 11, 1912.

"Part of the collections made for the Arboretum by Mr. E. H. Wilson and coming for the most part from western China. Mr. Wilson spent nearly eight years exploring the plant resources of this rich collecting field." (*Fairchild.*)

Plants of the following; quoted notes by Mr. Wilson, except as otherwise stated:

34523. TETRACENTRON SINENSE Oliver.

"A tree 20 to 50 feet high, first discovered by Dr. Augustine Henry in Hupeh, central China, and later introduced into cultivation by Mr. E. H. Wilson. It belongs to a recently described genus of Magnoliaceæ, has serrate alternate ovate-elliptic leaves and minute flowers, on drooping spikes 4 to 6 inches in length, of singular botanical interest, but of little value from a horticultural point of view." (*Veitch, Hortus Veitchii.*)

34523 to 34601—Continued.

34524. STYLIDIUM CHINENSE Loureiro.
(*Marlea begonifolia* Roxb.)

"(Wilson No. 596.) A bush or small tree. Flowers white; thickets, Fang Hsien, 1,100 meters altitude, western Hupeh."

34525. ILEX FARGESII Franch. **Holly.**

"(Wilson No. 231.) From Hsingshan Hsien, in woods, at an altitude of 1,200 to 2,100 meters, May and September, 1907. An evergreen shrub from Hupeh and Szechwan, western China, growing from 4 to 10 feet high, and very unlike a holly. The leaves are narrowly lanceolate, spineless, leathery, deep green above, and pale green beneath."

34526. VIBURNUM FOETIDUM RECTANGULATUM (Graebner) Rehder.

"From western China."

34527. ILEX PERNYI Franch. **Holly.**

From Hupeh and Szechwan, western China.

"A dense-growing species of holly with small spiny leaves and red berries, probably allied to *Ilex cornuta*, discovered by Père Paul Perny during his travels in China between 1850 and 1860. It is of very dwarf compact habit and has proved perfectly hardy at Coombe Wood." (*Veitch, Hortus Veitchii.*)

34528. ALBIZZIA JULIBRISSIN Duraz.

"(Wilson No. 792.) Tree 13 meters tall; woods, 1,300 meters altitude. Changyang Hsien; very rare."

34529. ACTINIDIA sp.

"(Wilson No. 512.) Climber, 4 to 6 meters; flowers buff yellow; fruit elongate, spotted; thickets, 1,300 meters altitude, western Hupeh; common."

34530. REEVESIA sp.

"(Wilson No. 4395.) A tree 20 meters tall, 1.5 meters girth, one only, side of stream, 2,300 meters altitude; Panlanshan, west of Kuan Hsien. Colloquially, the '*Sohlanshu.*'"

34531. COTONEASTER SALICIFOLIA FLOCCOSA Rehder and Wilson.

"From near Wenchwan Hsien, western Szechwan, at an altitude of 2,300 to 3,000 meters. A shrub from 2 to 4 meters in height, with graceful curving branches, floccosely tomentose leaves, and bright-red fruits."

34532. PALIURUS ORIENTALIS Hemsley.

"(Wilson No. 105.) A bush 3 to 5 meters tall; roadside thickets, vicinity of Ichang, 300 to 600 meters altitude."

34533. DEUTZIA LONGIFOLIA Franch.

"(Wilson No. 4300.) From Sungpan, Szechwan, western China, in thickets at an altitude of 2,700 meters, October, 1910. This species is readily distinguished from related species by the narrower, rather thicker leaves, rugose above and with strongly elevated veins on the whitish underside, by the purplish flowers in many-colored paniculiform cymes usually loose and borne on elongated branchlets, but sometimes rather dense and on short branchlets, and by the usually four styles and larger capsules measuring about 6 millimeters in diameter."

34534. CAMPTOTHECA ACUMINATA Decaisne

34535. MENISPERMUM sp.

"(Purdom No. 600.)"

34523 to 34601—Continued.

34536. DEUTZIA GLOMERULIFLORA Franch.

"(Wilson No. 4383.) From Chetoshan, southwest of Tachienlu, Szechwan; altitude, 3,500 meters; October, 1910."

34537. AMPELOPSIS MEGALOPHYLLA Diels and Gilg.

"(Wilson No. 143.) From north and south Ichang, western Hupeh, in woods, at an altitude of 1,200 to 1,500 meters; June and September, 1907. One of the most interesting of the recently discovered species from western China, having canes 20 to 30 feet long and large divided leaves often more than 3 feet in diameter. Survived the winter of 1911–12 without injury at the Arnold Arboretum."

34538. PINUS SINENSIS Lambert. **Pine.**

"(Wilson No. 1370.)"

34539. PRUNUS DEHISCENS Koehne.

"(Wilson No. 4029.) From western Szechwan. A shrub from 2 to 4 meters in height, with a green fruit having thin flesh easily soluble, which, according to Wilson, is dehiscent. Very similar to *P. mongolica* Maximowicz."

34540. JUNIPERUS FORMOSANA Hayata. **Juniper.**

"(Wilson No. 696.) (cf. *J. taxifolius*.) Thin tree 8 to 12 meters tall; fruit orange; moist thickets, 600 to 1,300 meters altitude; south of Ichang."

34541. THUJA ORIENTALIS L. **Arbor vitæ.**

"(Wilson No. 1272.) A tree 8 meters tall, one tree by the wayside; altitude, 1,300 meters; Mupin, western Szechwan; a distinct arbor vitæ."

34542. NEILLIA AFFINIS Hemsley.

"(Wilson No. 916 A.) Shrub, 1 to 1.5 meters; flowers, pink; thickets, 200 to 2,500 meters altitude; Washan, western Szechwan."

34543. STRANVAESIA DAVIDIANA Decaisne.

"From western Szechwan."

34544. ACER CATALPIFOLIUM Rehder. **Maple.**

"(Wilson No. 4208.) From near Yachoufu, western Szechwan, along streams, at an altitude of 450 to 600 meters, October, 1910. A tree reaching 10 to 23 meters in height, with a trunk sometimes 1.2 meters in diameter, having undivided leaves which turn yellow in autumn, making the tree very handsome."

34545. CUPRESSUS FUNEBRIS Endlicher. **Cypress.**

"(Wilson No. 798.) Tree, 10 to 30 meters; abundant in western Hupeh up to 1,100 meters; seeds from altitudinal limits. One of the most useful and beautiful of Chinese conifers. The wood, known as *Pah mu*, is largely employed in boat building and general carpentry."

34546. ILEX MACROCARPA Oliver. **Holly.**

"(Wilson No. 151.) From western Hupeh, 1907."

34547. CEPHALOTAXUS FORTUNEI Hooker.

"(Wilson No. 1386.) Tree, 8 meters; fruit, purple; roadsides, etc., 1,500 meters altitude; near Washan, western Szechwan."

34548. PINUS MASSONIANA Lambert. **Pine.**

"(Wilson No. 1468.) Kiating and vicinity, west to Mupin, western Szechwan; altitude up to 1,000 meters; May and November, 1908."

34549. PINUS SINENSIS Lambert. **Pine.**

"(Wilson No. 1472.) From Mupin, western Szechwan; altitude, 1,500 to 2,000 meters; November, 1908."

34523 to 34601—Continued.

34550. BERBERIS AGGREGATA Schneider. **Barberry.**

"(Wilson No. 4286.) A bush 1.5 meters tall, racemes erect, fruit red; thickets, 2,600 to 3,000 meters altitude; Mupin, western Szechwan."

34551. ZANTHOXYLUM sp.

"(Purdom No. 185.)"

34552. BERBERIS BERGMANNIAE ACANTHOPHYLLA Schneider. **Barberry.**

"(Wilson No. 4149.) A bush 1 to 2 meters; thickets, 1,000 to 1,500 meters altitude; west of and near Wenchwan Hsien, western Szechwan. An evergreen species."

34553. BERBERIS LEVIS Franch. **Barberry.**

"(Wilson No. 4287.) Bush, 1 to 1.5 meters tall; fruit small, globose, reddish; thickets, 2,000 to 2,500 meters altitude; Panlanshan, west of Kuan Hsien, western Szechwan."

34554. BERBERIS LIECHTENSTEINII Schneider. **Barberry.**

"(Wilson No. 4154.) Bush, 1 to 2 meters; spines very long, fruit dark red. Min Valley, near Maochou, western Szechwan, 1,600 to 2,300 meters altitude."

34555. JUGLANS CATHAYENSIS Dode. **Chinese butternut.**

"(Wilson No. 371.) Bush, more rarely a tree, 2 to 15 meters tall; woodlands, 600 to 1,800 meters altitude; northwestern Hupeh; common. The Chinese butternut."

34556. PHELLODENDRON SACHALINENSE Sargent.

"(Wilson No. 1286.) A tree, 6 to 10 meters; moist woodlands, 1,200 meters altitude; Mupin, western Szechwan."

34557. EHRETIA sp.

"(Wilson No. 74.) Tree, 6 to 15 meters tall, flowers white; woodlands north and south of Ichang; 300 to 1,000 meters altitude."

34558. PRUNUS CONRADINAE Koehne.

"(Wilson No. 5.) From Changyang Hsien, western Hupeh; in woodlands, at an altitude of 1,000 to 1,200 meters; June, 1907. A tree 3 to 12 meters in height, with a trunk 20 to 50 centimeters in diameter."

34559. MORUS sp. **Mulberry.**

"(Wilson No. 8 A.) Bush, 1 to 4 meters tall; fruit black; cliffs north and south of Ichang; 600 to 1,300 meters altitude."

34560. PRUNUS CONRADINAE Koehne.

"(Wilson No. 3 B.) From woods north and south of Ichang, western Hupeh; altitude 600 to 1,600 meters; July, 1907." See S. P. I. No. 34558 for description.

34561. CELTIS sp.

"(Wilson No. 343.) Tree, 10 meters tall, 1 meter girth; open country Hsingshan Hsien; 800 meters altitude."

34562. CELTIS sp.

"(Wilson No. 444.) Tree, 6 to 12 meters; fruit orange; woods and thickets, Patung Hsien; 1,200 to 1,300 meters altitude."

34563. PRUNUS CONRADINAE Koehne.

"(Wilson No. 7.)" See S. P. I. No. 34558 for description.

34523 to 34601—Continued.

34564. EVODIA VELUTINA Rehder and Wilson.

"(Wilson No. 994.) Tree, 13 meters tall; woods, 1,600 meters altitude; west of and near Wenchwan Hsien, western Szechwan."

Walnut.

34565. JUGLANS sp.

"(Wilson No. 390.) (Cf. *J. regia.*) Tree, 10 to 15 meters tall; cultivated; Fang Hsien; 1,500 to 2,000 meters altitude. A good-flavored walnut."

34566. CORNUS sp.

"(Wilson No. 1017.) Tree, 10 to 16 meters altitude; fruit blue-black; woodlands, 1,200 to 1,500 meters altitude; west of and near Wenchwan Hsien, western Szechwan."

34567. PYRUS sp.

"(Wilson No. 395.) Tree, 6 meters tall; flowers white; fruit small, globose, flattened; woodlands and open country, 600 to 1,300 meters altitude north and south of Ichang; common."

34568. EUPTELEA PLEIOSPERMA Hook. and Thoms.
(*E. davidiana* Baill.)

"(Wilson No. 588.) Hsingshan Hsing."

"An extremely interesting tree belonging to the Trochodendraceæ, widely distributed in central and western China, where specimens have been obtained by many travelers, the first by Peré David, after whom it is named. The plant forms a shrub or small tree 10 to 20 feet in height with neat nearly orbicular leaves terminated by a thick mucrolike apex, and colors well in autumn; the wood resembles that of the hazel. The species is very variable, there being a great many different forms." (*Veitch, Hortus Veitchii.*)

34569. CELTIS sp.

"(Wilson No. 593.) Tree, 6 meters tall, fruit black; woods, Fang Hsien; 1,300 meters altitude."

34570. LONICERA SIMILIS DELAVAYI (Franch.) Rehder.

"From western China. It seems more natural to treat *L. delavayi* only as a glabrous or glabrescent variety of *L. similis.*"

34571. PRUNUS CYCLAMINA Koehne.

"From Changyang Hsien, western Hupeh, in woodlands, at an altitude of 100 to 1,300 meters, April and June, 1907. A tree from 5 to 8 meters in height bearing red fruit, the calyxes resembling the corollas of the cyclamen in shape."

34573. PHELLODENDRON SACHALINENSE Sargent.

"(Wilson No. 4217.) Small tree, 6 to 10 meters tall; woodlands, 1,600 to 2,000 meters altitude; Mupin, western Szechwan."

34574. PRUNUS TENUIFLORA Koehne.

"(Wilson No. 13.) From Hsingshan Hsien, western Hupeh, in woods, at an altitude of 1,300 to 1,600 meters, May and June, 1907. This species is very similar to *P. sargentii* Rehder, but differs in the smaller and apparently paler and thinner leaves, the frequent presence of pubescence on the petiole, in the peduncle (4 to 20 millimeters long), the occasional pubescence of the pedicels, the very slender cupule (6.5 to 10 millimeters long, in *P. sargentii* 5.5 to 7 millimeters long) and the smaller and broader stone (6 to 8 millimeters long, in *P. sargentii* 9 to 10 millimeters long); also very similar to *P. conradinae.*"

34523 to 34601—Continued.

34575. FAGARA STENOPHYLLA (Hemsley) Engler.
(*Zanthoxylum stenophyllum* Hemsley.)

"(Wilson No. 1245.) Bush, 1 to 1.5 meters; thickets, 2,000 meters altitude; southeast of Tachienlu, western Szechwan."

34576. PRUNUS DIELSIANA LAXA Koehne.

"(Wilson No. 37.) From Patung Hsien, western Hupeh, in woods, at an altitude of 1,300 to 1,600 meters, May and June, 1907."

34577. BUDDLEIA NIVEA YUNNANENSIS (Dop) Rehder and Wilson.

"(Wilson No. 4403.) Bush, 2 to 2.5 meters; arid regions Tung Valley, near Tachienlu; 1,300 meters altitude; western Szechwan."

34578. PSEDERA THOMSONI (Lawson) Stuntz.
(*Vitis thomsoni* Lawson, in Hooker, Flora British India, vol. 1, p. 657, 1875.)
(*Parthenocissus thomsoni* Planchon, in De Candolle, Monographia Phanerogamarum, vol. 5, p. 453, 1887.)

Plants of this vitaceous climber from China were received under the name *Parthenocissus thomsoni*, published in 1887 by Planchon, based on *Vitis thomsoni* Lawson. The earliest name applied to this genus, however, is Psedera of Necker (Elementa, vol. 1, p. 158, 1790). It is therefore necessary to adopt here the name *Psedera thomsoni.*

"(Wilson No. 4184.) Three to five meters tall; cliffs, 2,000 to 2,300 meters altitude; west of and near Wenchwan Hsien, western Szechwan, October, 1910. Resembles *Psedera quinquefolia;* five rather coriaceous leaflets and stoutish branching tendrils."

34579. CLEMATIS CHINENSIS Retz. **Clematis.**

"(Wilson No. 1357.) Climber, 2 to 3 meters; flowers white; produced in September; fragrant; low altitudes, western Szechwan; common."

34580. VITIS sp.

34581. VITIS FLEXUOSA Thunberg.

"From western Hupeh, China."

34582. PRUNUS MUME Siebold and Zuccarini.

"(Wilson No. 4146.) From near Wenchwan Hsien, western Szechwan, in thickets, at an altitude of 1,600 to 2,000 meters, October, 1910."

34583. LIQUIDAMBAR FORMOSANA Hance.

"(Wilson No. 513.) Survived the unusually hard winter of 1911–12 at the Arnold Arboretum without injury, while the native species suffered in that locality, except in favorable situations. The feng tree of the Chinese, who utilize the lumber for making tea chests. A deciduous tree with handsome deep-green trifid leaves."

34584. POLIOTHYRSIS SINENSIS Oliver.

"(Wilson No. 500a.) From west of Wenchwan Hsien, western Szechwan, in woods, at an altitude of 1,000 to 1,300 meters, October, 1908. A tree 10 meters tall, 65 centimeters in girth, with nearly white flowers; common, rather slender, loosely branched; with gray bark deeply furrowed in adult, smooth in young trees. The leaves vary considerably in size and shape and also in degree of serration and pubescence. A colloquial name for this tree around Ichang is '*Yukuei chou.*'"

34523 to 34601—Continued.

34586. BUDDLEIA NIVEA YUNNANENSIS (Dop) Rehder and Wilson.

"(Wilson No. 4389.) Bush, 2 to 5 meters, arid regions west of and near Wenchwan Hsien, western Szechwan."

34587. PHELLODENDRON SACHALINENSE Sargent.

"(Wilson No. 4217.)" See S. P. I. No. 34573 for description.

34588. FAGARA STENOPHYLLA (Hemsley) Engler.
(*Zanthoxylum stenophyllum* Hemsley.)

"(Wilson No. 4213.) Bush, 1 to 2.5 meters; thickets, 1,300 to 1,600 meters altitude; Mupin, western Szechwan."

34589. CYDONIA sp.

"(Wilson No. 4120.) Bush, 4 to 6 meters, leaves felted below; fruit large ovoid, golden on one side, reddish on the other; roadside thickets, southwest of Tachienlu; 1,600 to 2,000 meters altitude."

34590. CORYLUS sp.

"(Wilson No. 4283.) Bush, 5 to 6 meters tall; fruit large, spiny; woods, 2,000 to 2,300 meters altitude; common; western Szechwan."

34591. CORYLOPSIS WILLMOTTIAE Rehder and Wilson.

"(Wilson No. 4406.) Bush, 3 to 4 meters; thickets, 2,300 to 2,600 meters altitude; near Tachienlu, western Szechwan."

34592. AMPELOPSIS DELAVAYANA Planch.

"(Wilson No. 124.) From Changlo Hsien, western Hupeh, in thickets, at an altitude of 600 to 900 meters, June and September, 1907. A form with simple leaves like the variety *amurensis* and only occasionally divided into three leaflets."

34593. ALNUS sp.

"(Wilson No. 1377.) Tree, 6 to 20 meters; side of river and moist woodlands, 1,500 to 2,000 meters altitude; southeast of Tachienlu, western Szechwan."

34594. LIGUSTRUM sp.

"(Wilson No. 754.) Bush, 3 meters; flowers paniculate; side of streams, 1,200 meters altitude; South Wuchan, eastern Szechwan."

34595. RHAMNUS DUMETORUM CRENOSERRATUS Rehder and Wilson.

"(Wilson No. 4096.) Bush, 1 to 1.5 meters; fruit black; thickets, 1,600 to 2,300 meters altitude; near Tachienlu, western Szechwan."

34596. ALNUS sp.

"(Wilson No. 1377a.) Tree, 10 to 25 meters; sides of streams, 600 to 1,500 meters altitude; abundant; western Szechwan."

34597. STYLIDIUM CHINENSE Loureiro.
(*Marlea begonifolia* Roxb.)

"(Wilson No. 596.)" See S. P. I. No. 34524 for description.

34598. EUCOMMIA ULMOIDES Oliver. **Tu chung.**

"(Wilson No. 383.) Tree, 6 to 16 meters tall; sparingly cultivated; 500 to 1,500 meters altitude; western Hupeh; *Tu chung.*"

34599. MAGNOLIA WILSONII (Finet and Gagnepain) Rehder. **Magnolia.**

"(Wilson No. 1374.) Bush or thin tree, 4 to 8 meters tall; flowers white; thickets and woodlands, 2,000 to 2,600 meters altitude; southeast of Tachienlu, western Szechwan."

PRUNUS MIRA, THE NEW SPECIES OF PEACH RECENTLY DISCOVERED NEAR TACHIENLU, SZECHWAN, CHINA, BY MR. E. H. WILSON, OF THE ARNOLD ARBORETUM. (S. P. I. No. 34601.)

It is remarkably distinct from *Amygdalus persica*, having a smooth stone and characteristic leaf scars. In this photograph, taken at the Brooksville (Fla.) Field Station on March 31, 1914, this tree, which is 2 years old, will be seen to be entirely dormant, while the branches of the two other peaches (*Amygdalus persica*), the one in Mr. Fulton's right hand, a seedling, and the other a Guadeloupe Island peach which retained its leaves all winter, were in full leaf. This habit of starting late in the spring, which it has shown at the Arnold Arboretum as well as in Florida, will probably be of great interest and importance to breeders of peaches, inasmuch as it may lead to the origination of peach varieties which bloom later in the season. The fruit of this new wild species is about an inch in diameter and edible. Photographed by Mr. David Fairchild, Brooksville, Fla., March 31, 1914.

34523 to 34601—Continued.

34600. DEUTZIA LONGIFOLIA Franch.

"(Wilson No. 4326.) From Panlanshan, west of Kuan Hsien, in thickets, at an altitude of 2,400 to 2,700 meters, October, 1910." See S. P. I. No. 34533 for description.

34601. PRUNUS MIRA Koehne. **Peach.**

"(Wilson No. 4205.) From 2 miles north of Tachienlu; very rare, at an altitude of 2,800 meters, October, 1910. This is the first peach known with a smooth stone. A tree up to 10 meters in height, with trunk 40 centimeters in diameter; fruit subglobose, 28 millimeters long, 25 millimeters in diameter, densely tomentose, edible."

For an illustration of this tree as grown at Brooksville, Fla., see Plate V.

34602. ANANAS SATIVUS Schult. f. **Pineapple.**

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received October 25, 1912.

"Suckers of our best pineapples, all derived from the variety called Victoria, but more or less improved by selection from the best plants." (*Dupont.*)

34603. MEDICAGO SATIVA PILIFERA Urban. **Alfalfa.**

From Tiflis, Caucasus, Russia. Presented by Mr. A. Rolloff, director, Botanic Garden. Received November 11, 1912.

Distribution.—The southeastern part of Russia in the vicinity of the Caspian Sea.

34604. PRUNUS sp.

From Jamaica Plain, Mass. From the Arnold Arboretum. Received November 11, 1912.

34605 to 34608. OPUNTIA spp. **Prickly pear.**

From Buenos Aires, Argentina. Presented by Dr. Carlos Thays, director, Jardin Botánico. Received November 14, 1912.

Cuttings of the following:

34605. OPUNTIA ARGENTINA Grisebach.

34606. OPUNTIA BRASILIENSIS (Willd.) Haworth.

34607. OPUNTIA SPEGAZZINII Weber.

34608. OPUNTIA CALVA Lemaire. (?)

34609. PICEA BREWERIANA S. Watson. **Veiled spruce.**

From Orleans, France. Purchased from Léon Chenault & Son, Received November 14, 1912.

See S. P. I. No. 28370 for previous introduction.

34610. PRUNUS SERRULATA Lindley. **Cherry.**
(*P. paniculata* Thunb.)

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received November 14, 1912.

"*Flore luteo pleno.* A yellow-flowered Japanese flowering cherry."

34611 to 34615.

From Rome, Italy. Presented by Dr. Gustav Eisen, California Academy of Sciences, San Francisco, Cal. Received November 18, 1912.

Quoted notes by Dr. Eisen:

34611 and 34612. FOENICULUM VULGARE Hill. **Fennel.**

34611. "*Messina finocchio* is somewhat similar or rather related to the sweet fennel, but differs in so many respects that I presume it to belong to a distinct species, or at least to a very distinct variety. It is a spring, fall, and winter plant, and is eaten from September 15 to about April 1. It loves a moderately damp and warm climate, such as the one in Italy, e. g., California and southern United States, and will probably succeed even in other States. The part eaten is the lower part of the stalk, as in celery, but the edible part is globular in the best variety, not oblong, as in celery. The interior solid part is the best, the outer leafstalk being cut away. In order to be tender, the plant must be heeled up, just like celery, either with earth or matting.

"Plant in beds under cover, beginning in July, and continue to February and March. It takes about four months to mature. When 6 inches tall, transplant in beds or rows about 12 inches apart, in rich, mellow soil. As it grows, heel up with soil, so as to bleach the lower part. Those planted in beds in July and August are eaten in September, October, and November. Those planted in February are eaten in April and May. In Rome I notice general planting in gardens, 12 inches each way, in October. The plants are then 12 inches tall. A good finocchio should weigh a pound, more or less. The inner, tender, white part is eaten raw, stewed, boiled, or roasted. It is delicious raw, like celery. Requires the same soil as celery. The richer the soil the better the result."

34612. "*Roman finocchio.*"

34613 and 34614. CAPSICUM ANNUUM L. **Red pepper.**

34613. "*Ercole Giallo* or *Golden Hercules.* Some reach the length of 6 inches, by 4 inches diameter, thickness of flesh from $\frac{1}{8}$ to $\frac{1}{4}$ inch. Sweet, tender, can be eaten raw, like an apple, or stewed, boiled, roasted, fried in oil, etc. For three months these giant peppers are our best vegetables, and in Naples you see whole cartloads sold on the streets. There is rarely even a trace of heat. Frequently as juicy as an apple. The Golden is, in my opinion, the best, and I have eaten it raw every day for three months without any ill effect."

34614. "*Rosso.*"

34615. HIBISCUS MUTABILIS L.

"Japanese rose hibiscus. This superb plant, growing to a large shrub or small tree, is now in the garden of the Museo delle Terme in Rome and was planted some 300 years ago by Michael Angelo, or, as some say, by the Pope Giulio III. The flowers are beautiful rose and as large as a saucer, 6 inches or more across, very flat, single. When the seed was obtained the plant was covered with hundreds of flowers, the shrub being about 10 feet or more high. It differs from any hibiscus I have ever seen in California or Mexico. A splendid plant for the lawn."

34616. CITRUS sp.

From Bangkok, Siam. Presented by Mr. M. de S. Macarthur. Received November 19, 1912.

Cuttings.

34617. ASPARAGUS FILICINUS Hamilton. **Asparagus.**

From India. Presented by Mr. Norman Gill, superintendent, Kumaun Government Gardens, Jeolikote, United Provinces. Received November 20, 1912.

See S. P. I. No. 34473 for previous introduction.

Roots.

34618. MEDICAGO SATIVA GLUTINOSA (Bieb.) Urban. **Alfalfa.**

From Dublin, Ireland. Presented by Sir F. W. Moore, Royal Botanic Garden. Received November 19, 1912.

"During the summer of 1911 a plant of *Medicago glutinosa* was noticed by me in the collection of alfalfas in the Royal Botanic Garden, Dublin. The plant seemed to be the true *M. glutinosa*, as evidenced by the yellow color of the flowers; also by the pods, which had from 1 to 1¼ turns; glandular hairs were also present. Seeds of this plant were secured, but all of the seedlings raised at Washington produced purplish flowers and pods having from 2 to 3 turns, probably brought about by the cross-pollination through insects. This is all the more likely, as there were numerous purple-flowered forms of *Medicago sativa* growing in the immediate vicinity of the *glutinosa* plants." (*G. W. Oliver.*)

34619. CEIBA PENTANDRA (L.) Gaertner. **Kapok.**
(*Eriodendron anfractuosum* DC.)

From Sandakan, British North Borneo. Presented by Mr. Orlando H. Baker, American consul. Received September 24, 1912. Numbered November 21, 1912.

"The kapok tree, native in the American Tropics, is widely distributed in the Tropics of both hemispheres. It attains a height of 75 to 100 feet with wide-spreading horizontal branches, making an attractive ornamental or shade tree. It is often planted along the borders of fields for fence posts. It begins to bear seed pods with kapok down when about 5 years old, and the yield of pods increases with the age of the tree. Well-developed trees under favorable conditions yield about 7,000 pounds per acre. Kapok can not be spun, but it is an excellent material for stuffing pillows, mattresses, life preservers, etc., and its use is rapidly increasing. (*L. H. Dewey.*)

34620 and 34621.

From Nice, Alpes Maritimes, France. Presented by Dr. A. Robertson Proschowsky, Chemin des Grottes, St. Helene. Received November 20, 1912.

Quoted notes by Dr. Proschowsky:

34620. ASPARAGUS ACUTIFOLIUS L. **Asparagus.**

"This plant is abundant here in a wild state, and the young shoots are gathered and form quite a regular article of commerce in the market. The shoots are much thinner than those of *A. officinalis* L. (in its cultivated form), but are very delicate of taste. The plant grows in the very worst places as concerns absence of soil (in fissures of rocks, high on slopes of gravel, etc.), as well in the full burning sun as in deep shade, and it seems to me that so drought resisting a plant would be worth ameliorating. So I send you seeds for trial in desert countries."

34621. MAYTENUS BOARIA Molina. **Maiten.**

"A very graceful evergreen tree, exceedingly drought resisting, the foliage of which is much appreciated in Chile, its native country, as cattle fodder."

34622. ARISTIDA sp. **Bushman grass.**

From South Africa. Presented by Prof. J. Burtt Davy, Government Agrostologist and Botanist, Union of South Africa, Department of Agriculture, Pretoria. Received November 18, 1912.

"The seed of this grass is very difficult to obtain, as it grows in the far western part of the Kalahari Desert and the eastern parts of the Great and Little Bushmanland and Namaqualand. Together with the Tsama melon (S. P. I. No. 34484) it is the principal stock and game food of the country." (*Davy.*)

34625. CANAVALI OBTUSIFOLIUM (Lam.) DC.

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received November 23, 1912.

34626. CUCUMIS MELO L. **Muskmelon.**

From Kabul, India. Presented by Mr. Wilson Popenoe, Altadena, Cal. Received November 11, 1912.

"*Sarda.*"

34627. CRATAEGUS PINNATIFIDA Bunge. **Hawthorn.**

From Nanking, China. Presented by Mr. W. Millward, University of Nanking. Received November 25, 1912.

"Red fruit (*shan cha*). I used to think the cranberry was the best fruit for sauce, but I have concluded since trying this that it is superior to the cranberry." (*Millward.*)

34629. PRUNUS CERASUS L. **Cherry.**

From Prague, Bohemia. Presented by Dr. Bohumil Nemec, at the request of Mr. W. A. Orton, of the Bureau of Plant Industry. Received November 26, 1912.

Scions.

34630. TETRASTIGMA HARMANDI Planchon.

From Los Banos, Philippine Islands. Presented by Mr. C. F. Baker, University of the Philippines, College of Agriculture. Received November 26, 1912.

"This is a tall-growing woody vine, which becomes loaded with fruit of the size and appearance of the Scuppernong grape and which is edible, making a very good "refresco." It is also used in Manila as an ornamental vine. Mr. Merrill tells me it is only found in Luzon and Indo-China." (*Baker.*)

34631. PICEA BREWERIANA S. Watson. **Veiled spruce.**

From Waldo, Oreg. Purchased from Mrs. A. M. Adams. Received November 27, 1912.

See S. P. I. No. 28370 for previous introduction.

34632. SOLANUM QUITOENSE Lamarck.

From Quito, Ecuador. Presented by Mr. S. Ordoñez Munoz. Received November 27, 1912.

Distribution.—An unarmed subshrub with fruits the size and color of a small orange, found in the vicinity of Quito, in Ecuador.

34633. CANAVALI ENSIFORME (L.) DC. **Jack bean.**

From Honolulu, Hawaii. Presented by Mr. C. K. McClelland, agronomist, Hawaii Agricultural Experiment Station. Received November 30, 1912.

"Concerning the use of jack beans as a dairy feed, Mr. P. M. Pond, of Honolulu, tells me that a few years ago he raised an excellent crop of jack beans, which he thinks averaged 20 tons per acre, but this crop, of course, was irrigated to some extent. He says that he had no great difficulty in inducing cattle to eat the jack bean. At first they refused to eat it, and then he tried wrapping it up in alfalfa and again they refused to eat it, by picking out the alfalfa and leaving the jack beans. He then ran the jack beans through a cutting machine, as he was accustomed to do with all roughage, and placed only small amounts of the jack beans in the ration with alfalfa, Para grass, and sorghum. By treating in this manner he found that they ate the vine readily, but at first refused the pods, but by the end of the week he states that they ate vines and pods quite readily and he was able to discontinue the use of alfalfa and use the jack beans in the above ration, using one-third jack beans in the roughage. Since growing this crop Mr. Pond states that he has been unable in several trials to get what he considered a good crop. The former crop was planted in July and taken off about the 1st of November. Since then he has tried different seasons of planting, but finds that the jack beans make a slow growth and have never produced as good a yield as he obtained in that first crop, and he has discontinued growing them." (*McClelland.*)

34634. CANAVALI ENSIFORME (L.) DC. **Jack bean.**

From Mayaguez, Porto Rico. Presented by Mr. C. F. Kinman, of the Porto Rico Agricultural Experiment Station. Received November 30, 1912.

"Of a large number of legumes that I have tried for a cover crop nothing seems so well adapted to all conditions and needs as *Canavali ensiforme.*" (*Kinman.*)

34635. STIZOLOBIUM sp.

From Lucknow, India. Presented by Mr. H. J. Davies, superintendent, Government Horticultural Gardens. Received November 30, 1912.

"Regarding the value of the fruits as an article of food, I may say that I have eaten them regularly and appreciate them as I have other similar beans. I have not heard of any bad results from eating the pods. It must be remembered that they are eaten only in the young state, when they are tender and practically free from hair. Before cooking, the outer skin is carefully scraped so as to insure that no hairs remain. The pod is very succulent and is, so far as I know, wholesome, and may be recommended as an article of diet." (*Davies.*)

34636. FERONIELLA OBLATA Swingle.

From Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture, Saigon. Received November 25, 1912.

34637 to 34639.

From San José, Costa Rica. Presented by Mr. Ad. Tonduz, botanist, National Museum. Received December 16, 1912.

34637. PSIDIUM FRIEDRICHSTHALIANUM (Berg) Niedenzu.

"*Cas.*"

See S. P. I. No. 26756 for previous introduction and description.

34637 to 34639—Continued.

34638. PSIDIUM MOLLE Bertoloni.

"Guisarro."

See S. P. I. No. 12821 for previous introduction.

Distribution.—On the slopes of the mountains in Guatemala and Costa Rica.

34639. CYPHOMANDRA sp.

"Introduced by Mr. Carlos Werckle, Museum Garden. The ripe fruits collected a month ago. The green fruits collected to-day, November 29, 1912. They have had no preparation and may be eaten with impunity. Plants about 1 meter 50 centimeters high, 4 to 5 centimeters in diameter at the base. Fruits hanging on long peduncles." (*Tonduz.*)

Received as *Cyphomandra quitoensis*, but the place of publication of that name has not yet been found.

34643 to 34654.

From Kioto, Japan. Presented by Miss E. R. Scidmore, Seoul, Chosen (Korea). Received November 29, 1912.

Quoted notes by Miss Scidmore:

34643. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"*Adzuki.* The red bean used for bean paste and yokan and soup. Those of best quality cost about 15 cents United States gold per quart; smaller beans, second quality, which are most used by confectioners, cost about 10 cents United States gold per quart."

34644. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"*Adzuki.* White, boiled, mashed, strained, cooked with sugar and kanten (seaweed gelatine) to make yokan, peppered and salted; also sugared as a confection."

34645. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Moench.)

The soy bean has been listed in previous inventories as *Glycine hispida* Moench. Mr. C. V. Piper has recently shown (Journ. Amer. Soc. Agron., vol. 6, p. 75–84, 1914) that the earliest name given by Linnæus to this plant was *Phaseolus max*, that the generic name should be Soja, and that the correct name is therefore *Soja max* (L.) Piper.

"*Kuro.* Used for making sweet paste, but more usually boiled with a pinch of salt and a pinch of sugar added when the water is poured off or shoyu poured on and kept hot until saturated. Served as a relish or accompaniment to each meal and always found in lunch boxes sold at railway stations."

34646. VICIA FABA L. **Broad bean.**

"*Sora.* Usually toasted; when the shells split they are something like pop corn; also cooked with sugar."

34647. VICIA FABA L. **Broad bean.**

"*Ota fuka.* Same as *Sora*, but fully grown. Popped like *Sora mame*, but more often boiled, first in wood ashes to remove skins, boiled soft, and sugar or shoyu added."

34648. PISUM SATIVUM L. **Pea.**

"*Shiroi endo.* For toasting in a corn popper or dusted with sugar after boiling."

34643 to 34654—Continued.

34649. PISUM SATIVUM L. **Pea.**

"*Aio endo.* Toasted in a corn popper and sometimes sugared in different colors."

34650. PISUM ARVENSE L. **Pea.**

"*Aka endo.* Toasted in a corn popper and boiled with sugar; used for ornamenting balls of white bean paste."

34651. PHASEOLUS VULGARIS L. **Bean.**

"*Toroku mame* (meaning that 10 of these beans equal 6 sun, or inches). Boiled with sugar, dried, and eaten as a confection."

34652. PHASEOLUS VULGARIS L. **Bean.**

"*Naga uzura mame.* Boiled and dipped in hot sirup (*long quail*)."

34653. PHASEOLUS VULGARIS L. **Bean.**

"*Kintoku mame.* Boiled and dipped in sirup and dried as candy."

34654. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Moench.)

"*Shiroi daiozu.* Used for making tofu or bean curd."

34655. ILEX PARAGUARIENSIS St. Hilaire. **Yerba maté.**

From Buenos Aires, Argentina. Presented by Dr. Carlos Thays, director, Jardin Botánico. Received November 14, 1912.

See S. P. I. No. 29097 for description.

34656. TRIFOLIUM ANGUSTIFOLIUM L. **Clover.**

Grown in the United States Department of Agriculture greenhouses at Washington, D. C., by Mr. G. W. Oliver, who collected the original seed 10 miles from Algiers. Numbered December 3, 1912.

34657. OSTERDAMIA MATRELLA (L.) Kuntze. **Manila grass.**
(*Zoysia pungens* Willd.)

From the Philippine Islands. Secured by Mr. C. V. Piper, of the Bureau of Plant Industry. Numbered December 4, 1912.

"This grass is abundant on or near the seashore in the Philippine Islands. Where closely clipped it makes a beautiful lawn. The Luneta in Manila some years ago was planted to Bermuda grass, but at the present time more than 90 per cent of the grass is the Osterdamia, which has gradually displaced the Bermuda, which it closely resembles in habit and appearance. During the past season it has been grown under temporary No. 01643. The grass has unusual promise as a lawn grass, especially near the Gulf coast and the Atlantic coast of Florida." (*Piper.*)

34658. PAEONIA sp. **Peony.**

From Mongolia. Presented by Mr. William R. Maxon, United States National Museum, who procured them through Dr. A. Hrdlička. Received December 13, 1912.

"Locality, Mongolia, about 80 miles south of the Siberian boundary, between Kiakhta and Urga, altitude 2,800 feet, occupying a narrow strip 200 to 400 feet wide on each side of the extreme summit of the ridges trending east and west; collected August, 1912." (*Maxon.*)

34659. HOLCUS SORGHUM L. **Giant Sudan sorghum.**
(*Sorghum vulgare* Pers.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received November 26, 1912.

"This seed does not come from the original shoot, which has not flowered this season, but from a seedling growing for some years. I consider that these seeds ought not to give other than hybrid descendants." (*Trabut.*)

34661 and 34662.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received November 30, 1912.

34661. EUCALYPTUS TRABUTI Vilmorin. **Eucalyptus.**

"A hybrid between *Eucalyptus botryoides* and *Eucalyptus rostrata*. Beautiful red wood, suitable for furniture.

"A hybrid found by Dr. Trabut in sowing seeds of the *Eucalyptus botryoides* which stood near a *Eucalyptus rostrata*. Always tends to revert to the male parent. It is the first undoubted Eucalyptus hybrid, and the existence of hybrids in this genus has been denied by Baron Ferdinand Mueller. This hybrid is one of the most vigorous of the genus, and in a nursery row at the Mustapha Experiment Station has crowded out the pure species." (*Trabut.*)

34662. PYRUS LONGIPES Coss. and Dur. **Wild pear.**

"A tree of fair height, with few spines, and small, rounded, oval, suborbicular leaves; fruit small, globular, with very long peduncles. Occurs in the mountains of Setif, Anini, and l'Aures, where it reaches its highest development."

34663 and 34664. SOLANUM TUBEROSUM L. **Potato.**

From Bogota, Colombia. Presented by Señor J. M. Vargas Vergara. Received December 4, 1912.

Tubers of the following; quoted notes by Señor Vergara:

"Two varieties of tubers cultivated at this altitude and in the adjoining cold districts to the east. Both are comestible, and, especially the former [S. P. I. No. 34663], appreciated for table use. They grow very well both in the mixed (turboso) soil of the cold region and in the "humicos" and sandy soil of the coast (mesetas) and in the very clayey soil. The black (negra) variety has shown more power of resistance against the attacks of the *Phytophthora infestans*, which have made the acclimatization of the varieties imported from other countries impossible. The diseases which affect potatoes in other countries do not exist here."

34663. "(No. 1.) *Tuquerrena negra.*"

34664. "(No. 2.) *Tuquerrena blanca.*"

34665. KOKIA ROCKII Lewton. **Tree cotton.**

From Hawaii. Presented by Mr. J. F. Rock, Division of Forestry, Honolulu. Received December 7, 1912.

See S. P. I. No. 31680 for description.

"The material listed under S. P. I. No. 31680 was sent from the island of Hawaii under the name of *Gossypium drynarioides* Seemann. Seemann published under the latter name a poor description from an incomplete specimen in the British Museum, collected on the island of Molokai by Nelson, the companion of Capt. Cook. Seemann did not see the fruit and described the calyx incorrectly, owing to the state of the specimen. His species is now extinct and was confined to the island of Molokai. In

1909 another species was discovered on the island of Hawaii, from whence came the seed listed in this inventory. A study of living material and complete herbarium specimens shows these plants to be trees which are larger than any known species of Gossypium and are seen to differ from the species of that genus in several particulars. The most conspicuous of these are: One ovule in each cell of the ovary; large, rounded calyx lobes which overlap in the bud and which usually fall before the capsule develops, giving the calyx the appearance of being truncate. These trees have been considered as belonging to a genus (Kokia) distinct from Gossypium. The new genus and species were published in 1912 in Smithsonian Miscellaneous Collections, vol. 60, part 5, pages 2 and 3." (*Lewton.*)

According to Mr. J. F. Rock, the tree of *Kokia drynarioides*, said to be dead, bore a few flowers and seed in the summer of 1914. Mr. Rock is propagating the species, and has sent some of the seed to the Office of Foreign Seed and Plant Introduction.

34666. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Deerbrook, Miss. Presented by Mr. G. M. Robertson through Mr. C. V. Piper, of the Bureau of Plant Industry. Received December 10, 1912.

"'Chicken corn' is an annual sorghum, somewhat resembling Johnson grass. It was formerly abundant throughout Louisiana and Mississippi, but of late years has become very scarce, probably due to the attacks of the sorghum midge. The origin of this sorghum is not known, and the seed is secured for the purpose of making a careful comparison with Sudan grass, S. P. I. No. 25017, and Tunis grass, S. P. I. No. 26301." (*Piper.*)

34667. ARGANIA SPINOSA (L.) Skeels. **Argan.**
(*A. sideroxylon* Roem. and Schult.)

From Tangier, Morocco. Presented by Mr. Maxwell Blake, American consul general. Received December 11, 1912.

See S. P. I. Nos. 3490 and 28783 for previous introductions and descriptions.

34668 to 34671.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received December 7, 1912.

34668. SWIETENIA MAHAGONI Jacquin. **Mahogany.**

"This is the sole representative of a genus of Cedrelaceæ, peculiar to the warmer parts of America, and yielding the timber known as mahogany of commerce. It is a stately tree, principally met with in Central America and Mexico, growing on the rocky soil. The leaves are imparipinnate, and the flowers axillary. The calyx is 5 cleft, short; the corolla has 5 petals, and the stamens are united into a tube bearing 10 anthers; the fruit is a 5-celled woody capsule, each cell containing numerous winged seeds. The bark is considered a febrifuge, and the seeds, prepared with oil, were used by the ancient Aztecs, as they are used by the modern Mexicans, as a cosmetic, under the name of Pepitos del Sopilotl, or Tzontecomatl. The timber is largely employed in making household furniture in this country." (*Dr. B. Seemann, in Lindley's Treasury of Botany.*)

34668 to 34671—Continued.

34669. SYZYGIUM CUMINI (L.) Skeels.
(*Eugenia jambolana* Lam.)

"A small evergreen tree met with throughout India and Burma, ascending the hills to about 6,000 feet. Is chiefly found along river beds, and is especially cultivated for its fruit in gardens and in avenues. There are several varieties that yield much better flavored fruit than others, but as a rule it is astringent and only serviceable when cooked in tarts and puddings. In Goa a wine is prepared from it, and a spirit (jambava) is spoken of by recent Sanskrit authors as distilled from the jambu. Some years ago brandy was made at Monghyr from the fermented fruit. The jáman is extensively used all over India in the manufacture of vinegar. The tasar silkworm is said to feed on the leaves of the tree. The timber is fairly durable, and is largely employed for building purposes, for agricultural implements, and for well work, since it resists the action of water. It gives a good fuel. The jambu is one of the trees held in veneration by the Buddhists, and is often planted near Hindu temples because regarded as sacred to Krishna." (*Watt, Commercial Products of India.*)

34670. CROTALARIA SALTIANA Andrews.

See S. P. I. No. 24119 for previous introduction.

34671. GUILANDINA BONDUC L. **Nickernut.**
(*Caesalpinia bonducella* Flem.)

"A leguminous plant found in nearly every tropical country, particularly upon the seashore, its extensive distribution being caused by the transportation of its seeds (which have an exceedingly hard, impervious shell) from one country to another by means of oceanic currents. It is a prickly, trailing shrub 10 or 12 feet or more in height. The flowers are of a rusty yellow color, and are borne in racemes. The pods, which are about 2 or 3 inches long, flattened, and covered with prickles, contain one, two, or three large, bony, lead-colored seeds, which are very hard and beautifully polished. The kernels have a very bitter taste, and are employed by the Indian doctors as a tonic and febrifuge." (*A. Smith, in Lindley's Treasury of Botany.*)

See S. P. I. No. 33570 for previous introduction.

34672 to 34690.

This is a collection for a comparative test to determine the relative value of *Amygdalus davidiana* as a stock for a number of different varieties of peaches. As indicated, certain of the varieties are budded on common peach stocks, while others are on *davidiana* stocks which it is planned to test. The budding was done at the Chico station, and it is believed that the test will be an impartial one.

34672 to 34683. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

34672. "Carman" on common peach (P. I. G. No. 8562).
34673. "Carman" on *A. davidiana* (S. P. I. No. 26604).
34674. "Elberta" on common peach (P. I. G. No. 8562).
34675. "Elberta" on *A. davidiana* (S. P. I. No. 26604).
34676. "Smock" on common peach (P. I. G. No. 8562).
34677. "Smock" on *A. davidiana* (S. P. I. No. 26604).
34678. "Belle of Georgia" on common peach (P. I. G. No. 8562).
34679. "Belle of Georgia" on *A. davidiana* (S. P. I. No. 26604).

34672 to 34690—Continued.

34680. "Salway" on *A. davidiana* (S. P. I. No. 26604).

34681. "Salway" on *A. davidiana* (S. P. I. No. 27110).

34682. "Crawford" on *A. davidiana* (S. P. I. No. 27116).

34683. "Crawford" on common peach (P. I. G. No. 8562).

34684 to 34688. AMYGDALUS PERSICA NECTARINA Ait. **Nectarine.**

34684. Quetta nectarine (S. P. I. No. 18235) on common peach (P. I. G. No. 8562).

34685. Quetta nectarine (S. P. I. No. 18235) on *A. davidiana* (P. I. G. No. 8481).

34686. Crosby nectarine (S. P. I. No. 11777) on apricot stock (S. P. I. No. 26048).

34687. Crosby nectarine (S. P. I. No. 11777) on *A. davidiana* (S. P. I. No. 26604).

34688. Crosby nectarine (S. P. I. No. 11777) on common peach (P. I. G. No. 8562).

34689 and 34690. DIOSPYROS KAKI L. f. **Persimmon.**

34689. *Diospyros kaki* (S. P. I. No. 16921) on *D. lotus*.

34690. *Diospyros kaki* (S. P. I. No. 22350) on *D. lotus*.

34691 to 34694.

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received December 13, 1912.

Quoted notes by Mr. Barrett:

34691. ANTIDESMA BUNIUS (L.) Sprengel. **Bignay.**

"A small, handsome tree, dicecious, with simple, dark-green, leathery leaves. The fruit is small, dark red, sweet, subacid in flavor, and produced in long racemes like the currant, and may be eaten raw or made into jelly."

See S. P. I. No. 18393 for previous introduction.

Distribution.—Throughout the hotter parts of India and eastward through the Malay Archipelago to the Philippines.

34692. MOMORDICA COCHINCHINENSIS (Lour.) Sprengel.

"An attractive climber of medium-vigorous growth, bearing roundish oblong fruits a little larger than an orange, having short orange-colored spines."

Distribution.—Southeastern Asia, extending from India to China, and in the Malay Archipelago eastward to the Philippines.

34693. UVARIA sp.

"An oblong semireniform fruit that grows in bunches of 30 to 50. The fruit is orange yellow in color; the flesh is yellowish and sweetish, gelatinous, and inclined to be acrid near the seed. The fruit grows on a scandent shrub, which should be considered an ornamental rather than an economic."

34694. CANARIUM sp. **Pili nut.**

"A large tree, indigenous to the Philippines, that produces an edible nut of excellent quality. There are two species—*Canarium ovatum* and *Canarium pachyphyllum*. Owing to the fact that the nuts of the two species are so similar to each other, it is impossible, not having seen the tree from which the nuts were obtained, to say to which species the seeds belong which are being sent you. Pili nuts are to some extent cultivated in southeastern Luzon, interplanted with coconuts."

34695. ANTIDESMA NITIDUM Tulasne.
(*A. moritzii* Muell.)

From Los Banos, Philippine Islands. Presented by Mr. C. F. Baker, University of the Philippines, College of Agriculture. Received December 9, 1912.

"One of the finest local shrubs, of good shape and covered with great numbers of pendent clusters of small berries which are long, bright red, finally black, and which are edible. This should make an important addition to ornamental shrubs for warm countries." (*Baker.*)

34696. FARADAYA SPLENDIDA Mueller.

From Bowen Park, Brisbane, Queensland, Australia. Presented by Mr. William Soutter, secretary and manager, Queensland Acclimatization Society. Received December 13, 1912.

"A very handsome climber, native of the more tropical regions of Queensland. The outer bark of the plant is used by the natives for stupefying fish. The green bark is tied in small bundles, weighted with a stone, and dropped into holes where the fish abound. The fish immediately become affected and rise to the surface, where they are easily caught." (*Soutter.*)

Distribution.—The vicinity of Rockingham Bay, in Queensland, Australia.

34697. DIOSPYROS KAKI L. f. **Persimmon.**

From Seoul, Chosen (Korea). Presented by the American consul general, Mr. George H. Scidmore. Received December 16, 1912.

"A hardy persimmon tree of the 'sheep-nose' variety, growing in the compound of this consulate general." (*Scidmore.*)

"The 'sheep-nose' variety has such good keeping qualities that I have kept them until late Easter." (*Horace N. Allen.*)

34698. PERSEA AMERICANA Miller. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Rome, Italy. Presented by Dr. Gustav Eisen, California Academy of Sciences, San Francisco, Cal. Received December 16, 1912.

"The tree in question is in all probability about 100 years old, and though I do not know for certain, I think it likely to have been imported from Mexico by, or at least at the time of, Valadier, the French gardener and architect, who in the beginning of 1800 arranged the Pincio Garden. The tree is growing there in perfect vigor and health, perhaps about 40 feet high, and the trunk several feet in diameter. The variety is one which I have never seen on the Pacific coast of Mexico or Central America, the fruit being 3½ inches long by 2½ inches wide, pear shaped—that is, tapering toward the stalk end. This year there were 100 fruits or over, all arriving at perfect maturity in October and November, the last ones being picked about November 15. The earlier fruits are larger and may average from one-half inch to 1 inch more than the size given above, which refers to the late fruits. In quality this fruit is equal to the very best that I have eaten in Guatemala and Mexico and is of exquisite flavor. The seed is perfectly round, pale yellow-brown, and evidently perfectly developed. The variety is also characterized by its precocity, ripening before frost. It will succeed, without any doubt, in most parts of California, Arizona, southern Texas, and the Gulf States generally; in a word, in any territory extending from the northern limit of the hardiest orange southward—that means the San Joaquin and Sacramento Valleys in California, the Coast Range, etc. Introduced into this territory the tree would prove of immense value and would enter at once into active competition with the Mexican and island avocado now imported and sold at a prohibitive price." (*Eisen.*)

34699. SORGHASTRUM STIPOIDES (H. B. K.) Nash. **Jaragua grass.**
(*Chrysopogon avenaceus* Benth.)

From Rio de Janeiro, Brazil. Presented by Dr. S. Mascarenhas. Received December 16, 1912.

"This seed is a native of Goyaz, Brazil. It is greatly used in the cattle camps, and springs up readily in grounds which have been burned over." (*Mascarenhas.*)

34700 to 34702.

From Shantung Province, China. Grown by Dr. William R. Faries, Coachella, Cal. Received December 17, 1912.

Quoted notes by Dr. Faries:

34700. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"The red bean was introduced to try as poultry and pigeon food. They have proved good forage for hens and turkeys, and the seeds are eagerly eaten."

34701. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"The green bean was introduced to try as poultry and pigeon food. These beans are showing modification in that they are longer, apices less flattened than those grown in Shantung. I wonder if they are the 'green gram' of India."

34702. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Mœnch.)

"The yellow bean with hairy pods (soya) I sent to the department in December, 1894, I think, from Pacific Grove, Cal., as 'Manchuria beans,' and they were sent to Maine station. This would result in failure, I think. They did not do well in Orange County, Cal., but grow well here. They are fine for green shelled beans."

34703. CARICA PAPAYA L. **Papaya.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received December 18, 1912.

"This seed was grown under our number 2593.1." (*Higgins.*)

34704. HOLCUS HALEPENSIS L. **Baru grass.**
(*Sorghum halepense* Pers.)

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens, through Mr. C. V. Piper, of the United States Department of Agriculture. Received December 18, 1912.

"*Effusus.* This grass is a native in the Ganges Valley, and is closely related to the Johnson grass of the Southern States, but differs in having a larger and more open panicle." (*Piper.*)

34705 to 34709. CANAVALI spp.

From Miami, Fla. Grown by Mr. Edward Simmonds at the Plant Introduction Field Station. Received December 18, 1912.

"This seed was received in 1908 from Mr. J. S. Houser, of the Cuban experiment station. It has proven very satisfactory as a green-manure crop at Miami, the plant continuing to grow throughout the winter season." (*Simmonds.*)

34705. Brown.

34706. Brown mottled.

34707. Greenish brown.

34708. Greenish brown mottled.

34709. Pinkish brown.

34710. QUERCUS SUBER L. **Cork oak.**

From North Augusta, S. C. Presented by Dr. W. E. Mealing at the request of Mr. Peter Bisset, of the Office of Foreign Seed and Plant Introduction. Received December 20, 1912.

"Collected from trees presumably sent out by the Division of Forestry about 1891."

34711. DIOSPYROS KAKI L. f. **Persimmon.**

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received December 26, 1912.

"*Taai hung t'sz.* Large red persimmon. This is decidedly the largest and sweetest persimmon I have ever seen. It does not have any of the astringent taste so common to the persimmon. It is very highly cultivated; rarely do you find seed. The skin is thin and of a deep-red color. Fruit that I have had on my own table of this variety measures 8 inches around at its widest circumference." (*Groff.*)

34712. STRYCHNOS PUNGENS Solereder.

From South Africa. Presented by Prof. J. Burtt Davy, government agrostologist and botanist, Union of South Africa, Department of Agriculture, Pretoria. Received December 23, 1912.

"A shrub which grows wild on the hills around Pretoria." (*Davy.*)

Distribution.—The Mozambique district and Lower Guinea and southward to the Kalahari region in southern Africa.

34713. DIOSPYROS KAKI L. f. **Persimmon.**

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received December 27, 1912.

"*Kaai sam t'sz* (chicken-hearted persimmon). This is a rather inferior persimmon not commonly sold on the markets. The fruits are about the size and shape of a small egg and very difficult to ripen. A common method employed by the Chinese for ripening this fruit is to cover them over with the leaves from the bastard banyan tree for several days; of course we do not have frost here. This persimmon is used as the stock on which to graft the finer varieties." (*Groff.*)

34714. JATROPHA CURCAS L. **Physic nut.**

From Tampico, Mexico. Presented by Mr. Thomas H. Bevan, American vice consul in charge. Received December 23, 1912.

"A shrub about the size of a hazelnut bush, with a trunk from 6 inches to 1 foot in diameter. Its production is most prolific, the limbs often breaking off from the weight of the nuts. The nuts when first taken from the husk have a dark-brown luster, which becomes opaque after being exposed to the air for a few days. When first taken from the tree they have a taste not at all unlike that of the fresh chestnut. They are said to contain about 50 per cent of oil, which can be extracted and used for cooking, the same as cottonseed oil. These nuts can be seen growing in the yards of nearly all the Mexican houses in the outskirts of Tampico. The Mexicans prefer them to peanuts, maintaining that their flavor is much more delicate. Along the narrow strip of land between the Tuxpam Canal and the Gulf of Mexico, in the State of Vera Cruz, they grow wild by the millions, and apparently thrive better in their native state, growing in the sand dunes, than in the rich land in the valley of the Panuco." (*Bevan.*)

It should be remembered that, like many other euphorbiaceous seeds, the physic nuts have a purgative effect. They should therefore be tested with extreme care.

34715 to 34724.

From Wellington, New Zealand. Presented by Mr. G. J. Clapham, Public Works Department. Received December 4, 1912.

Quoted notes from Blackwell and Laing, Plants of New Zealand:

34715. METROSIDEROS TOMENTOSA A. Rich. **Pohutukawa.**

"This handsome tree, sometimes 70 feet in height, with spreading branches and brilliant scarlet flowers in large terminal cymes rarely grows far from the sea or an inland lake. It finds a foothold in all sorts of impossible-looking places. Often it clings to the side of a cliff, and puts forth long twisted roots that attach it to the rocky wall. Specimens may frequently be found hanging from the top of a bank, with the roots above, and the branches almost dipping into the sea below. When growing on level ground, great bunches of red fibrous rootlets may occasionally be seen hanging from the boughs. These do not reach the ground, and their function is unknown. The timber is extremely hard and durable."

34716. CLIANTHUS PUNICEUS (Don) Solander. **Kowhai.**

"A white-flowered form of the kowhai, which in its scarlet-flowered form is one of the most gorgeous of New Zealand flowering plants. With its flowers 2 inches in length in long pendulous racemes and its heavy, dark-green, glossy, pinnate leaves it should prove a desirable addition to the drooping shrubs suitable for growing in regions having but slight frosts. The flowers are said to be pollinated by birds, in its native haunts."

34717. DODONAEA VISCOSA (L.) Jacq.

"A small hard-wooded tree with viscid shoots, and linear-oblong leaves 1 to 3 inches long. Flowers green, in small terminal panicles. Fruit dark brown, flat, winged. Occurs in dry woods on both islands of New Zealand. The wood is much valued by settlers for making mauls, as it does not split."

34718. GAULTHERIA OPPOSITIFOLIA Hook. f.

"The gaultherias are the most attractive of the native New Zealand heaths, with tiny white bell-shaped flowers."

34719. GAULTHERIA RUPESTRIS (L. f.) Don.

"A very variable erect or prostrate bush, with small white flowers in racemes, occurring among rocks throughout both islands of New Zealand."

34720. PHORMIUM TENAX Forst. **Phormium.**

"Ornamental form with green and purple leaves. Some forms will stand temperature as low as 15° F. without injury and only at 9° F. are the leaves killed."

34721. PITTOSPORUM BUCHANANI Hook. f.

"A species from New Zealand, which may prove useful like other species for ornamental hedges. Seeds coated with a viscid substance."

34722. PITTOSPORUM RALPHII Kirk.

"A beautiful, somewhat laxly branched shrub 15 to 20 feet in height, found in the central district of the North Island of New Zealand. Its dark-crimson fascicled little flower bells with their slightly emergent yellow anther tips, resting on the downy white young foliage, make it, when in bloom, one of the most attractive of the large New Zealand shrubs. The ripe introrse anthers may often be found in contact with the viscid stigmas, so that the plant is probably frequently self-pollinated."

34715 to 34724—Continued.

34723. SOPHORA TETRAPTERA J. Miller.

"A large flowered tree with deep-yellow blossoms, attaining a diameter of 3 feet. Leaflets in 10 to 20 pairs."

34724. CORDYLINE INDIVISA (Forst. f.) Steudel.

"A small tree not often more than 10 feet in height, found in the North and Middle Islands of New Zealand. Its leaves are very thick and leathery, with yellowish midribs. The flowers are in a drooping panicle. The fiber of the leaves is said to be stronger than that of Phormium and was used by the Maoris in making garments."

34725 and 34726. ACANTHOPHOENIX spp. **Palm.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received December 21, 1912.

"These are two of our forest prickly palms, the cabbage of which is commonly eaten when the tree is over 5 or 6 years of age, and is quite superior to that of *Dictyosperma alba* and *Areca rubra*." (*Regnard.*)

34725. ACANTHOPHOENIX CRINITA (Bory) Wendl.

34726. ACANTHOPHOENIX RUBRA (Bory) Wendl.

34727. ANNONA CHERIMOLA Miller. **Cherimoya.**

From San Jose, Costa Rica. Presented by Mr. Ad. Tonduz, botanist, National Museum. Received December 16, 1912.

See S. P. I. No. 32478 for previous introduction.

BOTANICAL NOTES AND PUBLICATION OF NEW NAMES.

PLANTS LISTED IN PREVIOUS INVENTORIES.

25630. MALUS FUSCA DIVERSIFOLIA (Bong.) Schneider.
(*Malus diversifolia* (Bong.) Roemer.)

This native Alaskan crab apple, received from the Alaska Agricultural Experiment Station, Sitka, was listed as *Malus diversifolia* (Bong.) Roemer. It is now considered, however, a subspecies of *Malus fusca*, and should read *Malus fusca diversifolia* (Bong.) Schneider.

26672 and 26685. JASMINUM FRUTICANS L.

These two jasmines secured by Mr. Frank N. Meyer, near Baidari, Crimea, Russia, have been determined as above.

PLANTS LISTED IN THIS INVENTORY.

34355. SAGUERUS MINDORENSIS (Beccari) O. F. Cook.
(*Arenga mindorensis* Beccari, Perkins, Fragmenta Florae Philippinae, p. 48, 1904.)

Seeds of a Philippine palm were received as *Arenga mindorensis* Beccari, the name under which the species was first described. The generic name Areng was published in 1803 by Labillardière (Mém. Inst. Nat. Paris, Sci. Math. Phys., vol. 4, p. 209) with one species, *Areng saccharifera* (p. 215), now identified with *Saguerus pinnata* Wurmb. (Verh. Batav. Gen., vol. 1, p. 351, 1779), the type of the genus Saguerus. As both genera were founded on the same species, the older name Saguerus is being used instead of Areng, or Arenga.

34578. PSEDERA THOMSONI (Lawson) Stuntz.
(*Vitis thomsoni* Lawson, in Hooker, Flora British India, vol. 1, p. 657, 1875.)
(*Parthenocissus thomsoni* Planchon, in De Candolle, Monographia Phanerogamarum, vol. 5, p. 453, 1887.)

Plants of this vitaceous climber from China were received under the name *Parthenocissus thomsoni*, published in 1887 by Planchon, based on *Vitis thomsoni* Lawson. The earliest name applied to this genus, however, is Psedera of Necker (Elementa, vol. 1, p. 158, 1790). It is therefore necessary to adopt here the name *Psedera thomsoni*.

34645. SOJA MAX (L.) Piper.

The soy bean has been listed in previous Inventories as *Glycine hispida* Moench. Mr. C. V. Piper has recently shown (Journ. Amer. Soc. Agron., vol. 6, p. 75–84, 1914) that the earliest name given by Linnæus to this plant was *Phaseolus max*, that the generic name should be Soja, and that the correct name is therefore *Soja max* (L.) Piper.

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1913.

(No. 34; Nos. 34728 to 35135.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1913 (NO. 34; NOS. 34728 TO 35135).

INTRODUCTORY STATEMENT.

The period covered by this inventory was characterized by no especially notable explorations, and the material listed is therefore largely that sent in by correspondents in foreign countries who are interested in plant-introduction work and have sent material in response to requests or on their own initiative. The growth of a keen interest in the domestication of wild plants all over the world is one of the most remarkable phenomena observable in connection with the foreign correspondence of the Office of Foreign Seed and Plant Introduction. That the exchange of seeds and plants of a purely experimental character builds up this interest and leads to the improvement of the crop plants of the world there can be no possible doubt, and there are some importations in this inventory which, though little known now, may play a distinctly important rôle in some of the plant industries of the country.

The cultivation of the avocado has reached the stage when every new and promising variety is deserving of a thorough trial. The two varieties from Campeche and Merida, Yucatan, collected by Mr. Collins (Nos. 34855 and 34856), the yellow-skinned variety known as Veranero from the higher altitudes of Venezuela, collected by Prof. Pittier (No. 35121), and the seedling (No. 34831) found by Dr. Eisen in the Pincio Gardens in Rome will be interesting to prospective as well as present growers of the fruit.

A really excellent fodder tree, such as that found by Mr. Collins in general use in Yucatan, can hardly fail to be of interest to forage-crop specialists. It is called the ramon, or bread-nut tree, and affords good fodder during the dry season around Merida (No. 34876).

Hardy ornamental shrubs which will stand the trying climates of the Great Plains are in great demand among those whose homes are there, and the collection of poplars, honeysuckles, and cotoneasters (Nos. 34784 to 34805), secured by Mr. Frank N. Meyer from Mr. A. D. Woeikoff, at Novospassko, Russia, should prove interesting to these. The tamarisk, as a drought and alkali resistant tree, is already

attracting attention in the Southwest, and a Kashgar species (No. 34780) will be a welcome addition to the collections which are being propagated for distribution there.

Among forage grasses *Poa pallens* (No. 34807), from Argentina, said to resemble Kentucky bluegrass, and *Eragrostis superba* (No. 34818), one of the best native South African pasture grasses of the high veld, where there are only 10 inches of rainfall, are worthy of special mention. A certain interest attaches to the introduction of *Stevia rebaudiana* (No. 34883), as this is the plant which several years ago thrilled the sugar-manufacturing world with its supposed possibilities. It was discovered, however, that the sweetness, which was said to be 16 times that of cane sugar, was produced by a glycerin and not by a new sugar.

The huge-fruited papaya (No. 34777) and a dwarf form which fruits when 7 feet high (No. 34903) from Yucatan, may be useful for the large amount of papain they can produce, even though their fruits may be too large to ship well.

A new and spineless holly (No. 34836), one of Mr. E. H. Wilson's discoveries in central China, with slender flexible branches and leaves 4 to 5 inches long, will probably become popular wherever it proves hardy. A beautiful red-flowered variety of *Leptospermum scoparium* (No. 34853) from New Zealand, which will thrive in the citrus belt, and *Sterculia quadrifida* (No. 34873), with brilliant crimson pods, from Queensland, will be welcomed by the residents of Florida and California.

The breeders interested in the improvement of our plums and cherries will be glad to have plants of the wild plum of the Maritime Alps, *Prunus brigantina* (No. 34851).

Those experimenters who have already grown male vines of the Chinese yangtaw, *Actinidia chinensis* (No. 35133), will be glad to plant out a specimen grown from cuttings of a female vine which fruited in Chelsea, London, in 1911.

Our already large collection of oriental persimmons has been enriched by three new kaki varieties (Nos. 34970 to 34972), among which is a large-fruited form used for drying purposes. The best dried persimmons are almost as palatable as dried figs.

It is to be hoped that somewhere in Florida amateurs can grow the curious ear flower of the Aztecs (No. 35039), used by them to flavor their chocolate perhaps centuries before the Spaniards landed in Mexico.

The new edible bean of Togoland (No. 34916), which buries its pods quite as the peanut does, and an undetermined plant from Angola, which produces edible tubers like potatoes (No. 34913), will appeal to the curious among our experimenters and may have unsuspected possibilities in them.

Whether the Palmyra palm of India (No. 35040) can be grown in southern California or Florida remains to be seen. In India it thrives in a hot, dry climate similar to ours and is cultivated for its sugar and the toddy which the Indians make from its sap. On the mainland of India and in Ceylon 100,000 acres of these palms are said to be cultivated.

Some remarkable forest trees and shrubs are possibly to be found among the 14 species of seed (Nos. 34837 to 34850) received from Castlemaine, Victoria, Australia.

From a previous introduction (No. 22326) Mr. Conner, at Chillicothe, Tex., has selected a dwarf form of kafir (No. 34911), similar to feterita, which seems to have unusual drought-resistant qualities, making it worthy of further distribution.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the notes on nomenclature have been prepared under the supervision of the Committee on Scientific Orthography by Mr. S. C. Stuntz, who has general supervision of the inventories, as well as of the other publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 8, 1914.

INVENTORY.

34728 to 34730.

From Trivandrum, Travancore, southern India. Presented by the Director of Agriculture. Received January 2, 1913.

Plants of the following:

34728. CYMBOPOGON CITRATUS (DC.) Stapf. (*Andropogon citratus* DC.)[1] **Lemon grass.**

See S. P. I. No. 33786 for previous introduction and description.

34729. CYMBOPOGON NARDUS (L.) Rendle. (*Andropogon nardus* L.) **Citronella.**

See S. P. I. No. 33787 for previous introduction.

34730. VETIVERIA ZIZANIOIDES (L.) Nash. (*Andropogon squarrosus* L. f.) **Vetiver.**

Distribution.—A stout grass found throughout the plains and lower hills of India, up to an elevation of 4,000 feet; generally cultivated and escaped into fields in Louisiana.

34731. PHASEOLUS VULGARIS L. Bean.

From Bigstone, S. Dak. Presented by Mr. C. J. Brand, of the Bureau of Plant Industry. Received December 30, 1912.

"The parent seed from which this sample was produced in 1912 was brought to Redwood Falls, Minn., from Schleswig-Holstein, Germany, in 1852, by Mrs. Herman Neuenberg. This sample was grown by my mother in her garden. It is more productive than the sorts usually grown in the Northwest, has a longer growing season, cooks much more quickly when cooked as a green snap bean, and recovers after a severe frost and continues to produce." (*Brand.*)

34732. NORMANBYA MERRILLII Beccari. Bonga de China.

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received January 7, 1913.

"A medium-sized palm with graceful, somewhat curved, pinnate leaves, somewhat resembling the common betelnut palm, but not so tall. The leaves are rather glaucous, and the pretty crimson fruits are borne just below the leaves in medium-sized bunches, the individual fruits less than 1 inch long. One of our most ornamental medium-sized palms, which thrives remarkably well in Manila." (*E. D. Merrill.*)

34733. ZEA MAYS L. Corn.

From Malta. Presented by Lieut. Col. E. P. S. Roupell, Lieutenant Governor and Chief Secretary to Government of Malta, through the American consul, Mr. James Oliver Laing. Received January 6, 1913.

"Maltese-grown corn, very red in color. This produces only one head per seed and on unirrigated ground the plant is about 2 feet 6 inches high. On irrigated ground the plant will grow 5 or 6 feet high."

[1] The italicized names in parentheses are the Index Kewensis names, added for convenience in connecting the names used in this Inventory with the foreign literature in regard to the plants.

34734 to 34751.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received December 2, 1912.

Seeds of the following:

34734. ACANTHOSICYOS HORRIDA Welw. **Narras.**

See S. P. I. Nos. 31401 and 31738 for previous introduction and description.

34735. ACROCOMIA TOTAI Mart. **Palm.**

Distribution.—A palm found in the provinces of Santa Cruz de la Sierra, Chiquitos, and Moxos, in Bolivia.

34736. ANACARDIUM sp. **Cashew.**

"From Japan."

34737. CITRULLUS VULGARIS Schrad. **Watermelon.**

34738. PTYCHOSPERMA GRACILIS. Labill. **Alexandra palm.**

"This wood is beautifully marked, and is much in favour for walking sticks, the outer portion being cut into suitable thicknesses for this purpose. It grows to a height of 70 to 80 feet, and occurs in Queensland." (*Maiden, Useful Native Plants of Australia.*)

34739. CARYOTA SOBOLIFERA Mart. **Palm.**

Distribution.—A palm 15 to 25 feet high, growing in the vicinity of Malakka, in the Malay Peninsula.

34740. CROTALARIA GRANTIANA Harvey.

See S. P. I. No. 31844 for previous introduction.

34741. ELAEIS GUINEENSIS Jacq. **African oil palm.**

See S. P. I. No. 22713 for previous introduction.

34742. LICUALA PELTATA Roxb. **Palm.**

"An ornamental fan palm from Assam, Burma, etc."

See S. P. I. No. 22711 for previous introduction.

34743. LOXOCOCCUS RUPICOLA (Thwaites) Wendl. and Drude. **Dotalu.**

"A pinnate-leaved palm from the moist region of Ceylon, occurring at an elevation of from 1,000 to 5,000 feet. Stems slender, erect, growing to a height of from 20 to 30 feet." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

34744. ONCOSPERMA FILAMENTOSUM Blume. **Nibung palm.**

Distribution.—A tall palm found in the islands of the Malay Archipelago.

34745. RHAPIS FLABELLIFORMIS L'Herit. **Palm.**

See S. P. I. No. 22707 for previous introduction.

34746. RICINUS COMMUNIS L. **Castor bean.**

"From Ecuador."

34747. ROYSTONEA REGIA (H. B. K.) Cook. **Royal palm.**
(*Oreodoxa regia* H. B. K.)

34748. SAGUERUS PINNATUS Wurmb. **Palm.**
(*Arenga saccharifera* Labill.)

See S. P. I. No. 26937 for previous introduction.

34749. THEA SINENSIS L. **Tea.**
(*Camellia thea* Link.)

See S. P. I. Nos. 26330 to 26343 for previous introductions.

34750. (Undetermined.)

34751. (Undetermined.)

34752 to 34754. NICOTIANA RUSTICA L. **Tobacco.**

From Scafati, Italy. Presented by Mr. A. Splendore, director, Royal Experimental Institute for the Cultivation of Tobacco. Received January 4, 1913.

"This *Nicotiana rustica*, abundantly fertilized with night soil (from cess pools or pits), may yield up to 30 or more quintals of leaves per hectare, with a nicotine content of over 10 per cent in our climate." (*Splendore.*)

Seeds of the following:

34752. "*Brasile leccese.* Originally from Brazil, established in the cultivated district of Nardo, Province of Lecce."

34753. "*Brasile selvaggio.* Wild Brazilian, originally from Brazil, established in the Palermo district."

34754. "*Erbasanta.* Originally from Brazil, established in the cultivated district of Cava dei Terreni, Province of Lecce."

34755 to 34767.

From Lawang, Java. Presented by Mr. M. Buysman, who received these seeds from Paraguay. Received December 2, 1912.

Seeds of the following:

34755. CITRUS sp.

"Large fruits."

34756. CITRUS sp.

"With brown skin."

34757. COCOS ROMANZOFFIANA Cham. **Palm.**

"An elegant palm, reaching a height of 40 feet, native of extratropical Brazil."

34758. COLLETIA CRUCIATA Gill. and Hook.

"An evergreen rhamnaceous shrub from Chile, with pale yellow flowers."

34759. POUTERIA NERIIFOLIA (Hook. and Arn.) Radlk.
(*Lucuma neriifolia* Hook. and Arn.)

See S. P. I. No. 8951 for previous introduction.

34760. MYRTUS sp.

"Edible fruit."

34761. MYRTUS sp.

"Edible fruit."

34762. PHILODENDRON ROBUSTUM Schott.

Distribution.—A climbing shrubby aroid found in tropical America.

34763. PSIDIUM GUAJAVA L. **Guava.**

"Wild."

34764. ROLLINIA sp.

"Wild plant."

34765. THUNBERGIA ALATA Bojer.

"A yellow-flowered climber from South America."

Distribution.—A shrubby climber with orange or buff flowers, growing in tropical Africa and generally cultivated in the Tropics.

34766. (Undetermined.)

34767. IPOMOEA QUAMOCLIT L. **Cypress vine.**

"Climber, red flowered."

34768. ELEUSINE CORACANA (L.) Gaertner. **Ragi.**

From Bangalore, Mysore, India. Presented by Mr. H. V. Krishnayya, Acting Officer in Charge of the Agricultural Department. Received January 8, 1913.

"*Hasaragumbi.* The ground should be plowed 4 to 6 times with an ordinary plow; rake with a bullock rake a day or two before sowing, sow with a country drill as a mixed crop, mixture being jola (*Andropogon sorghum*) and avare (*Dolichos lablab*), middle or end of June. Should be weeded with a hand hoe, two to four times, as required. (The particular plat from which the sample is brought was weeded only once.) It is harvested and stacked in November; thrashing and winnowing, December to February; yield, 1,500 to 2,000 lbs." (*Krishnayya.*)

34769 and 34770.

From Hangchow, China. Presented by Rev. J. H. Judson, Hangchow College. Received January 10, 1913.

Seeds of the following:

34769. SAPINDUS sp. **Soapberry.**

34770. THEA SINENSIS L. (*Camellia thea* Link.) **Tea.**

34771. CHAETOCHLOA ITALICA (L.) Scribn. (*Setaria italica* Beauv.) **Kursk millet.**

Grown at Akron, Colo., in 1912. Received December 26, 1912.

"This strain of millet is the product of a single plant selected at the Belle Fourche, S. Dak., Experiment Farm, in 1908, by Mr. A. C. Dillman, of the Office of Alkali and Drought Resistant Plant Breeding Investigations. The original seed (S. P. I. No. 22420) was obtained from the Dakota Improved Seed Company from a selected strain of Kursk millet developed by Prof. W. A. Wheeler. This strain of millet is of excellent forage type, is good in seed production, and is drought resistant." (*Dillman.*)

34772. MEDICAGO CARSTIENSIS Wulfen.

From Edinburgh, Scotland. Presented by Prof. Bayley Balfour, regius keeper, Royal Botanic Garden. Received January 13, 1913.

34773 and 34774.

From German East Africa. Presented by the Usumbwa Company, Post Tabora. Received January 14, 1913.

34773. CURCUMA LONGA L. **Turmeric.**

"Resembles ginger in the nature and form of its rhizomes and rounded tubers, but larger and shorter. In commerce they are separated into 'longs' and 'rounds.' In India much of the turmeric is used for dyeing silk, because the tuber contains a starch associated with a coloring matter (curcumine) of a beautiful orange yellow. Because of its essential aromatic oil it is used as a condiment in the Far East, and especially in the manufacture of curry. Many tribes of Polynesia use it to stain their bodies and their hair. Curcuma is known still in the spice trade under the name of Indian saffron, and in the West Indies under that of coolie saffron." (*Capus et Bois, Les Produits Coloniaux.*)

34774. CARICA PAPAYA L. **Papaya.**

34775. CITRUS sp. **Orange.**

From Shaowu, Fukien, China. Presented by Rev. J. E. Walker, D. D. Received January 13, 1913.

"On a recent visit to a small city near the back side of this province we were presented with some unusually large oranges, a little tart, but thin skinned, tender, juicy, and rich. The largest ones measured nearly 3 inches in diameter, cross section, and were regular in shape. In this region 5 to 10 degrees of frost occur." (*Walker.*)

34776. PHASEOLUS AUREUS Roxb. **Mung bean.**

From Beira, Portugese East Africa. Presented by Mr. R. H. B. Dickson, Assistant Director of Agriculture. Received January 10, 1913.

"On the Zambezi River this seed is termed '*Soroko*,' on the coast '*Shoombi*,' and in the interior between Beira and the Zambezi River it is known as '*Zoombi*.'" (*Dickson.*)

34777. CARICA PAPAYA L. **Papaya.**

From Merida, Mexico. Collected by Mr. G. N. Collins, of the Bureau of Plant Industry. Received January 14, 1913.

"This seed was secured in the market at Merida, Mexico, December 29, 1912. These seeds are from a specimen measuring 19 inches in length by 22 inches in circumference." (*Collins.*)

34778 to 34780.

From Angers, France. Purchased from Charles Detriche, sr. Received January 14, 1913.

34778. ARISTOTELIA CHILENSIS (Molina) Stuntz. (*A. macqui* L'Herit.) **Maqui.**

34779. POPULUS SIMONII Carrière. **Poplar.**

Distribution.—A poplar belonging to the *candicans* group, found in the province of Yunnan in China.

34780. TAMARIX KASHGARICA Lemoine. **Tamarisk.**

Distribution.—A Tamarix with small, glaucous leaves which are closely appressed to the stem, found in central Asia.

34782 and 34783.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 2, 1913.

Seeds of the following; quoted notes by Mr. Sargent:

34782. CRATAEGUS ARNOLDIANA Sargent. **Hawthorn.**

"This is one of the best of the large-flowered, large-fruited species. The fruit ripens in August and is edible."

34783. ACANTHOPANAX RICINIFOLIUM (Sieb. and Zucc.) Seem.

"A desirable hardy ornamental tree from northern Japan."

34784 to 34805.

From Novospassko, Syzran-Riazan R. R., Russia. Purchased from Mr. A. Woeikoff by Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 15, 1913.

Plants of the following:

34784. ACER GINNALA SEMENOVII (Reg. and Herd.) Pax. **Maple.**

"(No. 8.)"

34784 to 34805—Continued.

34785. CORYLUS AVELLANA L. **Filbert.**
"(No. 7.)"

34786. COTONEASTER IGNAVA Wolf.
"(No. 6.)"

34787. HALIMODENDRON HALODENDRON (Pallas) Voss.
(*Halimodendron argenteum* Fisch.)

34788. LONICERA FLORIBUNDA Boiss. and Buhse. **Honeysuckle.**
"(No. 5.)"

Distribution.—A shrub with reddish yellow flowers and red berries, found at an elevation of 4,000 feet on the slopes of the mountains in northern Persia.

34789. POPULUS ALBA L. **Poplar.**
"(No. 10.)"

34790. POPULUS DELTOIDES Marsh. **Poplar.**
(*Populus monilifera* Ait.)
"(No. 21.)"

34791. POPULUS BALSAMIFERA L. **Poplar.**
"(No. 13.)"

34792. × POPULUS BEROLINENSIS Koch. **Poplar.**
"(No. 15.)"

34793. POPULUS DELTOIDES Marshall. **Poplar.**
"(No. 20.)"

34794. POPULUS CANDICANS Aiton. **Poplar.**
"(No. 14.)"

34795. POPULUS NIGRA L. **Poplar.**
"(No. 18.)"

34796. POPULUS NIGRA L. **Poplar.**
"(No. 19) *Pushkiniana.*"

34797. POPULUS LAURIFOLIA Ledeb. **Poplar.**
"(No. 12.)"

34798. POPULUS SIMONII Carrière. **Poplar.**
"(No. 16.)"

Distribution.—A tree found in the vicinity of Peking, China.

34799. POPULUS SUAVEOLENS Fischer. **Poplar.**
"(No. 22.)"

34800. POPULUS TREMULA L. **Poplar.**
"(No. 17.)"

34801. POPULUS PETROWSKIANA Schroeder. **Poplar.**
"(No. 11.)"

34802. PRUNUS MAXIMOWICZII Rupr.
"(No. 1.)"

34803. PRUNUS PROSTRATA Labill. **Bush cherry.**
"(No. 2.)"

34804. TAMARIX PENTANDRA Pallas. **Tamarisk.**
"(No. 4.)"

Distribution.—A shrub or small tree with flowers ranging from rose color to white, found on the low banks of streams from southern Russia and Asia Minor eastward to Turkestan and Persia.

34784 to 34805—Continued.

34805. ULMUS GLABRA SUBEROSA (Moench) Guerke.

"No. 3, *Forma turkestanica* Regel."

Distribution.—A form of *Ulmus glabra* having winged branches, found in southern Europe.

34806 and 34807.

From Canadon de las Vacas, Santa Cruz, Argentina. Presented by Mr. H. T. Reynard. Received January 7, 1913.

34806. BROMUS UNIOLOIDES (Willd.) H. B. K.

See S. P. I. No. 31896 for previous introduction.

34807. POA PALLENS Poir.

Distribution.—A grass resembling Kentucky bluegrass found in the vicinity of Buenos Aires, in Argentina.

34809. CASSIA OBOVATA Colladon.

From South Africa. Presented by Mr. J. Burtt Davy, government agrostologist and botanist, Union of South Africa, Department of Agriculture, Pretoria. Received January 20, 1913.

"Seeds from the southwestern Transvaal and Bechuanaland. The root is supposed to possess medicinal virtues and the leaves are said to be used in tropical Africa as a substitute for and adulterant of commercial senna. I have no personal experience of its merits. The plant prefers a sandy soil and grows in a region of summer rain with a 15 to 20 inch rainfall." (*Davy.*)

Distribution.—A partly woody perennial found in Upper Guinea and Lower Guinea and in Abyssinia and Egypt, in Africa, and from Arabia eastward to the western part of India, in southern Asia.

34810. CASSIA OCCIDENTALIS L.

Presented by Mr. Walter W. Charter, Director of Agriculture, Quelimane, Portuguese East Africa. Received January 22, 1913.

34811 to 34816.

From Tokyo, Japan. Presented by the Tokyo Plant, Seed, and Implement Co. Received January 6, 1913.

34811. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

"*Kintoki.*"

34812 TO 34816. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

34812. "*Muroran.*"

34813. "*Shiro-wase.*"

34814. "*Aka-wase.*"

34815. "*Dainagon.*"

34816. "*Kuro-wase.*"

"In order to make the bean meal, the bean is first boiled or steamed. The outer skin then is easily separated by sieving through meshes or by press. Water being then taken off or evaporated from the product, bean meal remains, which may be used for making cakes and confections at once, or may be dried for future use." (*T. Watase.*)

34817 and 34818.

From South Africa. Presented by Prof. J. Burtt Davy, government agrostologist and botanist, Union of South Africa, Department of Agriculture, Pretoria. Received January 15, 1913.

34817. CHAETOCHLOA LINDENBERGIANA (Nees) Hitchc.
(*Panicum lindenbergianum* Nees, Flor. Afr. Austral., p. 47, 1841.)
(*Setaria lindenbergiana* (Nees) Stapf, Flora Capensis, vol. 7, p. 422, 1899.)

Seeds of this South African grass were received under the name *Setaria lindenbergiana* Stapf. The generic name Chaetochloa is now used for this genus. *Chaetochloa lindenbergiana* seems never to have been published, and it is necessary to adopt it here. (*A. S. Hitchcock.*)

Distribution.—A perennial grass found in tropical East Africa and southward to the Cape.

34818. ERAGROSTIS SUPERBA Peyritsch.

"This is one of our best native pasture grasses on the high veld and extends also to the bush veld, its range being from about 3,500 feet (or lower) to 5,500 feet or more. It is common in sandy soils in British Bechuanaland, where the rainfall is perhaps not more than 10 inches, coming in summer." (*Davy.*)

Distribution.—A perennial grass found in Portuguese West Africa and southward to the Cape.

34819. ELICHRYSUM ORIENTALE (L.) Gaertn. **Immortelle.**

From Toulon, France. Presented by Mr. M. F. Mansfield, consular agent, through the American consul general at Marseille. Received November 25, 1913.

"The choice of soil is very important. Rocky or sandy soils with southern exposure are best adapted for this purpose. In rich, deep, cold soils the immortelle is killed by the first frosts.

"After the soil has been broken and well prepared, the ground is laid out in rows 40 to 50 centimeters apart (15.74 to 19.68 inches); in these rows the young plants are set out at a distance of 30 to 35 centimeters (11.81 to 13.77 inches) from each other. Care should be taken to heap up the soil about the roots. These early plants should be watered by means of a sprinkler. If it should rain after the planting, sprinkling would be unnecessary. It would be advisable during the first four or five days to protect these young plants from the hot rays of the sun. When they have begun to grow, they should be exposed to the full rays of the sun, and during the winter protected from the cold, for the immortelle is very sensitive to frost. It is for this reason that the immortelle is cultivated at Ollioules and Bandol only in soils well exposed to the sun and upon the southern slopes.

"Cultivation of the immortelle is exceedingly simple. It consists in spading lightly the ground about the plant and applying a suitable fertilizer. The ground should be spaded whenever weeds spring up around the plants. As for the fertilizer, it consists of oil cakes and stable manure, which is placed about the roots of the young plants when they have attained a certain development. The fertilizer should be renewed in this region every year, in October or November.

"The immortelle commences to yield after the second year and continues to bloom even more than 20 years. In this region the flower is gathered in June or July. At the moment the flowers commence to open and show a small red point in the center and are of a beautiful golden yellow, they should be gathered. When the flowers have arrived at this degree of maturity, they should be immediately gathered, for they open very rapidly and lose their commercial value. After the flowers have been

gathered, they are exposed to the sun for drying. When dry, they are made into bouquets and hung up in dry rooms, out of reach of mice." (*Mansfield.*)

Distribution.—An herbaceous perennial found in Asia Minor and cultivated generally in the countries of southern Europe bordering on the Mediterranean Sea.

34820 and 34821.

From St. Petersburg, Russia. Presented by Mr. Slobool Schicoff, Director of Agriculture. Received January 20, 1913.

34820. NICOTIANA RUSTICA L. **Tobacco.**

34821. NICOTIANA TABACUM L. **Tobacco.**

34822. MELILOTUS OFFICINALIS (L.) Desr. **Yellow sweet clover.**

From India. Presented by Gen. F. Booth Tucker, the Salvation Army, The Mall, Simla. Received January 8, 1913.

"This seed was received as *Medicago falcata.*" (*H. N. Vinall.*)

34823. CHENOPODIUM QUINOA Willd. **Quinoa.**

From Puno, Peru. Presented by Mr. C. Bues. Received December 28, 1912.

"Seed of a Peruvian grain. It is exceedingly nourishing and might interest breakfast-food manufacturers. Grows on semiarid land; is sown in rows and gives big crops. Adaptable strains might be selected. Grows at 10,000 to 11,000 feet altitude and even higher. Sown near the beginning of the rainy season. The plant resembles a weed very common in the States and should not be pulled as a weed." (*Bues.*)

34824 and 34825.

From Buitenzorg, Java. Presented by Mr. T. E. van der Stok, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 25, 1913.

34824. CANAVALI ENSIFORME (L.) DC. **Jack bean.**

"White bean."

See S. P. I. No. 32647 for previous introduction

34825. CANAVALI GLADIATUM (Jacq.) DC. **Sword bean.**

"Gray bean."

See S. P. I. No. 32646 for previous introduction.

34826 and 34827. GOSSYPIUM HIRSUTUM L. **Cotton.**

From Zomba, Nyasaland Protectorate. Presented by Mr. E. W. Davy, for the Director of Agriculture. Received January 27, 1913.

34826. "(No. 16.)"

34827. "(No. 57.)"

34828. ANANAS SATIVUS Schult. f. **Pineapple.**

From Ibadan, southern Nigeria. Presented by Mr. Frank Evans, Department of Agriculture. Received January 25, 1913.

Seeds.

34829. PERILLA NANKINENSIS (Lour.) Decaisne.
(*Perilla arguta* Benth.)

From Hankow, China. Presented by Mr. J. Paul Jameson, American vice consul general. Received January 27, 1913.

"*Su tze.*"

34830. CITRUS LIMONIA × GRANDIS.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 28, 1913.

34831. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Rome, Italy. Presented by Dr. Gustav Eisen, California Academy of Sciences, San Francisco, Cal. Received January 30, 1913.

"Cuttings were procured from Pincio." (*Eisen.*)

See S. P. I. No. 34698 for previous introduction.

34832 and 34833. **Palm.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received January 20, 1913.

34832. DECKENIA NOBILIS Wendland.

See S. P. I. No. 34079 for previous introduction.

34833. ROSCHERIA MELANOCHOETES Wendland.

See S. P. I. No. 33347 for previous introduction.

34834. ROSA LESCHENAULTIANA Red. and Thor. **Rose.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received January 31, 1913.

Cuttings.

34835. FERONIELLA OBLATA Swingle.

From Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture. Received January 29, 1913.

See S. P. I. Nos. 29341 and 34636 and Inventory 31, p. 84, for previous introductions and descriptions.

34836. ILEX CORALLINA Franchet. **Holly.**

From Orleans, France. Presented by Barbier & Cie., at the request of Vilmorin-Andrieux & Cie., Paris, France. Received February 19, 1913.

"Among the new hollies recently introduced from China this is one of the most remarkable; it is entirely different from all other hollies existing in our collections in its peculiar habit. According to Franchet it reaches a height of from 3 to 4 meters. It is a bushy shrub, smooth in all parts, with lenticular bark and glutinous buds. Its branches, long and slender, bend gracefully without being pendent; being very flexible, they are waved by the slightest breeze. Its leaves are very long, from 4 to 5 inches, and from 1¼ to 1½ inches in width, are thin and rapidly become coriaceous; they are ovate lanceolate, finely denticulate, brilliant deep green above and pale green beneath. The fruits are numerous, small, coral red, whence comes the specific name. This shrub, which is so graceful, has none of the rigidity of our hollies; it grows rapidly and does not seem dependent on the nature of the soil. It has stood our

winters without injury, even as young seedlings; perhaps it is rash to present it as hardy for the north of France, but I am sure that for the climate of central France it will be an open-air shrub. It will be very decorative for the cliffs of wild gardens, in large rockeries, just as it will have its place in massed effects with other species. We have grown this interesting novelty from seeds sent by Mr. E. H. Wilson, which were collected in the thickets near Mupin, central China, at altitudes of from 1,500 to 1,800 meters. He had already met this species the preceding year in the ravines around Ichang." (*Léon Chenault, Revue Horticole, November 16, 1912.*)

34837 to 34850.

From Australia. Presented by Lieut. Col. J. W. B. Field, Castlemaine, Victoria, Australia. Received January 8, 1913.

Seeds of the following:

34837. ACACIA ELATA Cunningham. **Cedar wattle.**

See S. P. I. No. 1800 for previous introduction.

Distribution.—A handsome tree, often 60 feet high, found in shaded ravines in the Blue Mountains in New South Wales, Australia.

34838. ACACIA SPECTABILIS Cunningham. **Mudgee wattle.**

See S. P. I. No. 30783 for previous introduction.

34839. BORONIA PINNATA Smith.

Distribution.—A smooth shrub about 2 feet in height bearing wandlike branches with pinnate leaves and rose-colored flowers, which have the odor of the hawthorn. Found in New South Wales and Victoria, Australia, and in Tasmania.

34840. BRACHYCHITON ACERIFOLIUM Mueller. **Flame tree.**
(*Sterculia acerifolia* Cunn.)

See S. P. I. No. 4607 for previous introduction.

Distribution.—A large timber tree with racemes of rich red flowers. Found in the valleys of rivers in New South Wales in Australia.

34841. DILLWYNIA ERICIFOLIA Smith.

Distribution.—An erect heathlike shrub found in wet, sandy places along streams in Queensland, New South Wales, and Victoria, Australia, and in the northern part of Tasmania.

34842. KENNEDYA RUBICUNDA (Schneevoogt) Ventenat.

See S. P. I. No. 19792 for previous introduction.

Distribution.—A perennial climbing vine with drooping racemes of dark-red flowers 1 to 2 inches long. Found in Queensland, New South Wales, and Victoria, Australia.

34843. LAGUNARIA PATERSONII (Andrews) Don. **Queensland pyramid tree.**

"An Australian tree, with white, close-grained, easily worked wood used for building, which grows to a height of 40 to 60 feet and to a diameter of 1½ to 2½ feet. The bark furnishes a very beautiful fiber on maceration." (*Maiden, Useful Native Plants of Australia.*)

Distribution.—A tree with large, pale-red, nearly white, flowers, growing on Norfolk Island, east of Australia, and in Queensland.

34844. LEPTOSPERMUM FLAVESCENS Smith. **Tantoon.**

Distribution.—A tall shrub found along the banks of streams in Queensland, New South Wales, and Victoria, Australia, and in Tasmania.

34837 to 34850—Continued.

34845. PALLASIA CAPENSIS Christm.
(*Calodendrum capensis* Thunb.)

See S. P. I. No. 31857 for previous introduction.

34846. PITHECOLOBIUM PRUINOSUM Benth.

See S. P. I. No. 7212 for previous introduction.

Distribution.—A tree with the flowers in globular umbels found along streams in Queensland and New South Wales, Australia.

34847. PITTOSPORUM REVOLUTUM Dryander.

Distribution.—A tall shrub with tomentose shoots and leaves. Found on ridges and in river valleys in Queensland, New South Wales. and Victoria, Australia.

34848. POLYSCIAS ELEGANS (Moore and Mueller) Harms.
(*Panax elegans* Moore and Mueller.)

Distribution.—A large and handsome tree found along rivers and on shores of Queensland and New South Wales, Australia.

34849. CORDYLINE TERMINALIS Kunth. **Palm lily.**

Distribution.—A shrubby plant found in the tropical part of India and eastward through the Malay Archipelago to Australia.

34850. CORDYLINE BAUERI Hook. f.

Distribution.—A treelike plant often 20 feet high found on Norfolk Island, east of Australia.

34851. PRUNUS BRIGANTINA Villars.

From Nice, France. Presented by Dr. F. Mader. Received January 31, 1913.

"Seeds of *Prunus brigantina* (S. P. I. No. 31954) I sent you from Tenda. Unfortunately last year I was unable to procure, in the eastern Maritime Alps, fruits for making an exact comparison, and the question whether there are two varieties or even species going under that name can only be solved next autumn. However, I send you now some seeds of the western form, exceedingly common near the springs of the Var stream, etc. If the differences quoted prove to be constant and important, this, and not the eastern form from Tenda, must be considered as the true typical *Prunus brigantina* (or *prunier des Alpes* of French foresters). I hope you will now have the two plants, whether they be different or not." (*Mader.*)

34852. TRIFOLIUM PRATENSE L. **Red clover.**

From Amsterdam, Holland. Presented by Prof. Hugo de Vries, through Mr. Walter T. Swingle, of the Bureau of Plant Industry. Received January 29, 1913.

"Seeds of the 5-leaved clover." (*De Vries.*)

34853. LEPTOSPERMUM SCOPARIUM Forster. **Nicholls's manuka.**

From Long Rock, Cornwall, England. Presented by Rev. A. T. Boscawen. Received January 31, 1913.

Nichollsii. "The history of this species has been given by Mr. M. L. Roberts, of Christchurch, New Zealand. During the summer of 1905 Mr. M. W. Nicholls, of Belfast, New Zealand, visited the establishment of Nairn & Son, wearing in his buttonhole flowers of this shrub. These horticulturists, who saw at the first glance that it

was a new plant, asked for information concerning it and inquired as to the means of procuring it. The only information that Mr. Nicholls gave them was that the plant originated in the region between Chaney's Corner and the sea. Messrs. Nairn requested cuttings, which Mr. Nicholl furnished them. These cuttings did not succeed very well at first, because they were too woody, and only one or two small plants were obtained. One shrub, however, bore seeds. On sowing these a hundred plants were produced, which, except seven, presented the same characters as the type and later yielded for the most part white flowers. But the exceptions have soft reddish foliage of a different appearance. When they flowered it was found that they had red flowers. The best of these was named *Nichollsii*, and it is this which is now received. A large number of specimens have been sent to Europe, with great success, and have succeeded well there. This new variety forms a valuable addition to horticulture. They are very much sought, however, for growing in gardens in the citrus regions and they are cultivated in the open air like *Leptospermum scoparium*, that is to say, in ground not calcareous, but in well-drained, airy locations. In less mild climates they are cultivated in the cool house. They are easily propagated by cuttings." (*Revue Horticole, 1912, p. 577.*)

34854. XANTHOSOMA SAGITTAEFOLIUM (L.) Schott. **Yautia.**

From Basse Terre, Guadeloupe. Presented by the American consul. Received February 3, 1913.

"*Malanga coloré*. Colored or wine eddo. The roots of this eddo are much esteemed. They are smaller and more nearly round than the white eddo. The color inside is pale yellow. They are mealy and dry when cooked. The young leaves of the plant are selected as the best for making 'calalou.' " (*F. T. F. Dumont.*)

Tubers.

34855 and 34856. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Mexico. Collected by Mr. G. N. Collins, of the Bureau of Plant Industry. Received February 4, 1913.

Scions of the following; quoted notes by Mr. Collins:

34855.

"From San Pablo, Campeche, January 20, 1913. A thin-skinned fruit with small seeds; reputed to be of very superior quality."

34856.

"From a tree said to produce the finest and largest fruits in Merida, a place noted for its fine avocados."

34859. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

From San Salvador, Salvador. Presented by Mr. Thomas Hinckley, American consul general, who procured them through the Sociedad Nacional de Agricultura, Ganadería é Industrias of Salvador. This seed was procured at the request of Mr. R. T. Ruiz. Received January 30, 1913.

"A black pole bean so prolific as to defy comparison. It is found in its best state in the department of Chalatenango. The best trait of this bean beside its splendid flavor is the fact that it is sown in the same hill with the Indian corn at the same time the latter is being sown and it matures with the corn, the stalk of the latter being its natural support." (*Ruiz.*)

34860. CITRUS *sinensis* (L.) Osbeck. **Orange.**

From Florida. Presented by Mr. Goldsmith H. Williams, United Fruit Co., New York. Received February 5, 1913.

"*Melitensis sulcata*, navel orange, which I once had in Florida. It was sent to Mr. Henry G. Hubbard by Mr. William Saunders, from Washington. This variety of the navel is more prolific than the so-called Washington navel and is otherwise a little superior, in my estimation." (*Williams.*)

Cuttings.

34861. DIOSCOREA sp. **Yam.**

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received January 30, 1913.

"A superior sort of yam (*Dioscorea* sp.), P. I. No. 2394. I think we have never sent you this variety heretofore. It has a very distinct habit, as to the rhizomes, from other yams, somewhat resembling the old West Indian '*yampee*' in that respect." (*Barrett.*)

34862. CUCURBITA MAXIMA Duch. **Pumpkin.**

From El Rancho, Guatemala. Presented by Mr. E. E. Knight. Received January 7, 1913.

34863. MEDICAGO SATIVA L. **Alfalfa.**

From Paris, France. Presented by Mr. Frank H. Mason, American consul general. Received February 5, 1913.

"This seed is said to be a very hardy variety, well adapted to a dry climate and a sandy soil. It should be sown in the usual manner, about 20 to 25 pounds to the acre, preferably when spring is well advanced." (*Mason.*)

34864. CHAENOMELES JAPONICA (Thunb.) Lindl. **Japanese quince.**
(*Pyrus japonica* Thunb.)

From Nancy, France. Purchased from Lemoine & Sons. Received February 7, 1913.

"*Incendie.* Very beautiful, with double perfect flowers; petals round, perfectly imbricated; live, fiery scarlet in color." (*Revue Horticole.*)

Plants.

34865 and 34866.

From Argentina. Presented by Mr. W. F. Wight, of the Bureau of Plant Industry. Received February 7, 1913.

34865. PRUNUS ARMENIACA L. **Apricot.**

"These seeds are from a seedling tree in a garden between San Juan and Alta Sierra, Province of San Juan, Argentina. The fruit was fair sized and of excellent quality. Unfortunately no more remained on the tree." (*Wight.*)

34866. SOLANUM sp.

"These tubers came from near Guatrache, Argentina, where there has been practically no rain since last May. It is said the Indians eat them raw, and while the taste is agreeable enough at first, I can't say that the taste later is particularly good." (*Wight.*)

Tubers.

34872 and 34873.

From Australia. Presented by Mr. James Pink, Wellington Point, near Brisbane, Queensland. Received February 10, 1913.

Seeds of the following; quoted notes by Mr. Pink:

34872. GREVILLEA BANKSII R. Brown. **Kurrajong.**

"One of the most beautiful flowering shrubs of Australia. Evergreen shrub or tree, 12 to 20 feet, with red flowers."

34873. STERCULIA QUADRIFIDA R. Brown.

"An umbrageous tree producing its seeds in large pods, which when ripe are of a brilliant crimson color, containing black seeds, which are sometimes eaten by children. When ripe the pods burst open and their bright crimson color, contrasting with the black seeds, gives the tree a very handsome and striking appearance."

Distribution.—Along streams and near the coast in northern Australia and Queensland.

34874. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertn.)

From China. Presented by Dr. N. S. Hopkins, Methodist Hospital, Peking. Received February 10, 1913.

34875. CEIBA PENTANDRA (L.) Gaertn. **Kapok.**
(*Eriodendron anfractuosum* DC.)

From Guam. Presented by Mr. J. B. Thompson, special agent in charge, Guam Agricultural Experiment Station, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received February 8, 1913.

34876. PIRATINERA ALICASTRUM (Swartz) Baillon. **Bread-nut tree.**
(*Brosimum alicastrum* Swartz.)

From Merida, Mexico. Collected by Mr. G. N. Collins, of the Bureau of Plant Industry. Received February 12, 1913.

"*Ramon.* Seeds from the hospital grounds. A small tree common in northern Yucatan, the branches of which are the principal fodder during the dry season. All kinds of animals seem to eat the leaves freely. The plant is strictly tropical, and I do not know that it could be grown anywhere in the United States, but it was so extensively used and seemed to afford such excellent forage in the dry regions of Merida that it might be worth while to give it a trial." (*Collins.*)

34877 to 34884.

From Villa Rica, Paraguay. Presented by Señor Don Carlos Mahaux. Received February 4, 1913.

34877. ANNONA sp.

34878. ARISTOCLESIA ESCULENTA (Arruda) Stuntz. **Pacuri.**
(*Platonia insignis* Mart.)

"A very large, beautiful tree with hard wood. The leaves are coriaceous and elegantly marked with numerous parallel veins; the flowers are large, of a light-red color, solitary at the ends of the small branches. The fruit, called *pacoury uva* in Brazil, is said to be very sweet and delicious, whilst the seeds have the flavor of almonds." (*Lindley, Treasury of Botany.*)

34879. CAMPOMANESIA sp.

34877 to 34884—Continued.

34880. EUGENIA UNIFLORA L. **Pitanga.**

"A small shrubby tree of Brazil, bearing small, round, and ribbed fruit about 1 inch in diameter, rather flattened at the ends, and of a bright-red waxy appearance. These suggest small tomatoes at a distance; the pulp is edible, but to most people is too acid and perfumed to be agreeable. It is said to make good jelly, being also used in preserves. The tree thrives best at medium elevations, 1,500 to 3,000 feet. Propagated by seed." (*Macmillan, Handbook of Tropical Gardening.*)

34881. GARCINIA sp.

34882. GENIPA AMERICANA L. **Genipap.**

"The fruit is succulent, as large as an orange, with rather thick rind, crowned by the calyx, and tapering at each end. It is known as the genipap fruit or, in Venezuela, as the marmalade box." (*Masters, in Lindley's Treasury of Botany.*)

Distribution.—A tree found in the northern part of South America from the province of Minas Geraes, in Brazil, northward to Venezuela, and in the West Indies.

34883. STEVIA REBAUDIANA (Bertoni) Hemsley.

"This Paraguayan herb is of peculiar interest because of the very large saccharine content of the leaves. A tiny fragment placed on the tongue seems as sweet as a lump of sugar of similar size. Several years ago the discovery that this plant, then called Eupatorium, contained a substance many times sweeter than sugar, was heralded by the press and excited the keen interest of sugar planters all over the world. The substance turned out to be a glycerin and the anxiety of sugar interests subsided." (*David Fairchild.*)

Distribution.—An herbaceous perennial belonging to the aster family. Found in the woods along the Monday River, in the southeastern part of Paraguay.

34884. (Undetermined.)

34885. HAEMANTHUS EETVELDEANUS Wildem. and Th. Dur.

From Brussels, Belgium. Presented by the Ministère des Colonies. Received January 23, 1913.

Distribution.—A bulbous perennial bearing large rose-colored flowers in umbels. Found in damp places in the Kongo.

Bulblets.

34888 to 34902.

From Merida, Mexico. Procured by Mr. G. N. Collins, of the Bureau of Plant Industry, in the market at this place. Received February 14, 1913.

34888 and 34889. PHASEOLUS COCCINEUS L. **Bean.**

34888. *De Santa Cruz.*

34889. *Santa Cruz.*

34890 to 34900. PHASEOLUS VULGARIS L. **Bean.**

34890. *Sa Ma.*

34891. *Fijot San Miguel importo.*

34892. *Ibes colorado del pais.*

34893. *Colorado del pais.*

34894. *Ani beno.*

34895. *Ibes*, or *Hibes.*

34896. *Vera Cruzena.*

34897. *Schol.*

34898. *Chol y bul.*

34899. *Honjo*, or *horilla.*

34900. *Gol bio.*

34901 and 34902. VIGNA SINENSIS (Torner) Savi.

34901. *Le Carita.*

34902. *Espelon del pais.*

A LARGE-FRUITED, FINE-FLAVORED PAPAYA (CARICA PAPAYA L.) FROM YUCATAN.
(S. P. I. No. 34903.)

A low-growing variety, found by G. N. Collins near Merida, producing from 15 to 20 of these enormous fruits when only 7 feet high. They have a fine flavor, although often 19 inches long. (Photographed by Mr. Collins in a Chinese garden near Merida; Crop Acclimatization No. 14945.)

AN EVERGREEN SHADE TREE (HARPEPHYLLUM CAFFRUM BERNH.) FOR WINDY LOCATIONS IN FLORIDA. (S. P. I. NO. 34943.)

In the public square around the Government building, Cape Town, stands this row of Kafir plum trees. According to the veteran botanist Prof. MacOwan, it is the best tree yet discovered to stand the continual whipping by the wind from off Table Mountain. It grows well in Florida. (Photographed by David Fairchild, March, 1903; No. 094.)

34903. CARICA PAPAYA L. **Papaya.**

From Merida, Mexico. Presented by Mr. G. N. Collins, of the Bureau of Plant Industry, who procured them through Señor Arturo Zavala from the Chinese Gardens. Received February 5, 1913.

"Seeds from a very large and fine-flavored fruit. The trees produce when small and are very prolific; many trees not over 7 feet in height are bearing from 15 to 20 enormous fruits and, of course, innumerable smaller ones. The Chinese gardeners about Merida are securing most remarkable results with this fruit." (*Collins.*)

For an illustration of the fruit of this papaya, see Plate I.

34904. PERSEA AMERICANA Miller. **Avocado.**

(*Persea gratissima* Gaertn. f.)

From Merida, Mexico. Presented by Mr. G. N. Collins, of the Bureau of Plant Industry, who secured them through Señor Arturo Zavala, the alcalde of Merida. Received February 18, 1913.

"Cuttings from a very famous tree at some distance from the town." (*Collins.*)

34907. MANGIFERA sp. **Mango.**

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture, at the request of Mr. Carlos Wercklé, of the Muséo Nacional. Received February 20, 1913.

"*Cazique.* From Coyolar." (*Van der Laat.*)

Cuttings.

34911. HOLCUS SORGHUM L. **Kafir.**

(*Sorghum vulgare* Pers.)

From Chillicothe, Tex. Grown from selected seed. Received February 26, 1913.

"(F. C. I. 4201.) A dwarf kafir, selected from S. P. I. No. 22326 by Mr. A. B. Conner, Chillicothe, Tex., November, 1910. This selection closely resembles Blackhull kafir, but has grains that seem somewhat larger and whiter, making it appear similar to feterita. Several years' tests at Chillicothe, Tex., have demonstrated the excellent quality of this selection, especially in regard to drought resistance." (*H. N. Vinall.*)

34912. ASPARAGUS AFRICANUS Lam. **Asparagus.**

From Cedara, Natal, Union of South Africa. Presented by Mr. E. Harrison, principal, School of Agriculture. Received February 25, 1913.

34913. (Undetermined.)

From Angola, Africa. Presented by Mr. Merlin W. Ennis, Boston, Mass. Received February 25, 1913.

"*Olanamba.* The wild ones are found on stony mountain slopes where the soil is sandy. This cultivated root seems to thrive on any soil and will bear well on soil too poor and sandy for potatoes. The natives eat these roots raw. We bake them, use them in soup, etc." (*Ennis.*)

Roots.

34914. SWIETENIA MACROPHYLLA King. **Mahogany.**

From Caracas, Venezuela. Presented by Mr. H. Pittier, of the Bureau of Plant Industry. Received March 7, 1913.

"Seeds of a mahogany tree which I took at first for *Swietenia mahagoni.* Later I got flowers and I have now doubts as to whether it is really that species. If you have received the seeds, which should be tried in southernmost Florida or California, or better in Porto Rico, you may just as well refer them to my No. 5789." (*Pittier.*)

34915. LICANIA PLATYPUS (Hemsl.) Fritsch. **Sansapote.**
(*Moquilea platypus* Hemsl.)

From San Jose, Costa Rica. Presented by the Department of Agriculture. Received January 29, 1913.

"Belonging to the family Rosaceæ. It grows in the form of a tree, rather scarce on the Pacific coast of Costa Rica, but more common in other parts of Central America, where it is sometimes known as *Sunza*. The fruit is large, somewhat oblong, with a reddish gray skin; the flesh yellowish, fibrous, and rather sweet, inclosing an oval, depressed seed." (*W. E. Safford.*)

See S. P. I. No. 31686 for previous introduction.

Roots.

34916 to 34919. KERSTINGIELLA GEOCARPA Harms. **Kandela.**

From Togoland, Africa. Presented by Dr. A. Engler, director, Königliches Botanisches Museum, Dahlem, Berlin, Germany. Received March 20, 1913.

"This remarkable new edible bean was first described by Dr. H. Harms, in 1909, from specimens forwarded by Dr. Kersting, of Sokode, Togoland. Since then it has been in cultivation and under observation in the botanic gardens at Dahlem and Jena, and last year Dr. Harms published a short article in which he summarized briefly what was then known about this ground bean, adding some valuable information concerning the conditions of its cultivation.

" 'Two years ago I called attention to an important botanical discovery by Dr. Kersting, who, in the northern territory of Sokode-Basari, Togoland, came across an especially interesting new kind of bean which matures its pods below instead of above ground. The well-known groundnut (*Arachis hypogæa*) and the peanut (*Voandzeia subterranea*) are similar instances. Kersting found that the natives of Togoland cultivated the bean, which they called *kandela*, in three varieties distinguished by their colors. I described this bean, which is not known in the wild state, as *Kerstingiella geocarpa*, the type of a new genus of Leguminosæ.

" 'In July, 1910, Auguste Chevalier, the indefatigable African explorer, reported the existence in Dahomey of a plant which, to judge from the description, was very similar to, if not identical with, Kersting's bean. He named it *Voandzeia poissoni*, a new species of the genus of the peanut, giving the Dahomey name as "*Doi*." (Compt. Rend., vol. 151, p. 84.) The beans are sold in the market of Abomey by the natives, who grow them largely. There were also here colored varieties (white, black, and mottled). An account may be found in Quinzaine Coloniale, 1910, No. 16, page 590. Chevalier's description suggested at once the identity of the Dahomey and the Togo bean. M. Chevalier was, on his return from Africa, good enough to send me a specimen of his Dahomey plant whilst I supplied him with material from Togoland, and our comparisons proved that the two beans were actually identical or, in other words, that the Togo bean extended into Dahomey, and M. Chevalier has already stated (Compt. Rend., vol. 151, p. 1374) that he, too, considered his species as identical with *Kerstingiella geocarpa*. He gives an important account of its distribution in Dahomey, quoting various vernacular names. The species is also said to occur in British Nigeria, but up to the present I have seen no specimens from there. In Togo, as well as in Dahomey, the plant is known only in the cultivated state, which renders Kersting's and Chevalier's discoveries the more remarkable.

" 'Chevalier gives analyses (Quinzaine Coloniale, 1910, No. 16, p. 1375) which show that the nutritive value of the beans is very considerable. They are said to equal the richest peanuts (*Voandzeia subterranea*) in nutritious matter, whilst they have at the same time a more pleasant taste, particularly for Europeans, recalling that of the finest varieties of beans. The yield, owing to the smallness of the seed (8 to 10 mm.

by 6 to 7 mm.), is not large. In Dahomey, according to the French explorer, the women are forbidden to eat the beans.

"'Last year (1910), thanks to the kindness of First Lieut. Haring, of Sokode-Basari (Togo), the botanic garden at Dahlem, near Berlin, received excellent seeds of this remarkable fruit. They germinated well, and numerous plants were raised by Chief Inspector F. Ledien, not a few of them flowering in July and August. A number of seeds were sent to Inspector E. Rettig, of the botanic garden at Jena, and under his careful and intelligent treatment splendid specimens grew up, of which some even set fruit. The unfavorable, cold, and dull summer of 1910, however, prevented their maturation. The flowers are very small and papilionaceous and spring from the creeping stem close to the ground. The flowers of the variety with light or occasionally black-mottled seeds are white, those of the other varieties pale violet.

"'The Hausas call it *Kouarourou*, according to Chevalier. It is also said to occur in Borgu. It is true at the first glance it might be mistaken for *Voandzeia subterranea*, and Schweinfurth actually suggests that this has been the case with certain writers (Zeitschrift d. Gesellschaft f. Erdkunde, 1910), but the expert will always distinguish them. Habit and leaves are similar and yet distinct, and Voandzeia, so long and well known to us, has above all much larger globose seeds.

"'Kerstingiella might possibly also be grown with advantage in other parts of our colonies. Moist and hot countries do not suit it; in Togo it occurs according to Kersting in sandy, laterite loam, in a climate of low humidity, with occasional heavy showers, and a shade temperature of 18° to 34° C.'" (*Kew Bulletin, 1912.*)

34916. Black.

34917. Buff.

34918. White, with black eye.

34919. White, with brown eye.

34920. LANSIUM DOMESTICUM Jack. Duku.

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received March 22, 1913.

For previous introductions see S. P. I. Nos. 24431 and 34074.

34921 to 34923.

From Marseille, France. Presented by Dr. E. Heckel, director, Colonial Museum. Received March 22, 1913.

34921. SOLANUM COMMERSONII Dunal. **Potato.**

34922. SOLANUM COMMERSONII Dunal. **Potato.**

34923. SOLANUM CHACOENSE Bitter. **Potato.**

Distribution.—A tuberous species found in sandy places near the margins of woods in the province of Villeta, in Paraguay.

34927 and 34928.

From Poona, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received February 26, 1913.

Roots of the following; quoted notes by Mr. Burns:

34927. ANDROPOGON ODORATUS Lisboa.

"The authors of the Pharmacographia Indica (III, pp. 570 and 571) observe: 'We have distilled the grass and obtained from it an essential oil, having at first an odor recalling that of cassia and rosemary, but afterwards a strong persistent odor of oil of cassia. Messrs. Schimmel & Co. noticed the odor of pine-needle oil in this sample and found the specific gravity to be 0.945.' It grows in the Deccan and some parts of Konkan in more or less mooroomy soil. There is no literature available regarding its culture."

34927 and 34928—Continued.

34928. VETIVERIA ZIZANIOIDES (L.) Nash. **Vetiver.**
(*Andropogon squarrosus* L. f.)

"'The root of *Khas-khas* is extensively made into the aromatic-scented mats [tatties] which are hung in the doorways and kept wet to cool the atmosphere during the hot season. The raw material is exported to Europe, chiefly from Madras ports. Gildemeister and Hoffman (Volatile Oils, p. 289) say "the root is of a reddish color and often contaminated with red sand; a half distilled root is often found in commerce and can be recognized by its light color." It seems more than probable that much of the so-called half-distilled root is in reality the roots that have been used in tatties for a season and are bought back by traders to be exported. The constant application of water and exposure to the fierce sun might easily exhaust a large proportion of the oil and bleach the roots. The roots when distilled with water yield a fragrant oil known in European trade as vetiver, which is used as a perfume and for flavoring sherbet. It commands a high price in Europe, being employed in many favorite scents. It is the most viscid of essential oils, and hence its sparing volatility is taken advantage of in fixing other perfumes. The oil is hardly, if ever, exported from India, European supplies being either locally made from Indian roots or derived from Reunion. According to Piesse the yield is about 10 ounces per hundredweight. Other observers have found it to vary from 0.2 to 3.5 per cent. In medicine the root has been regarded by European physicians as a diaphoretic and as a preservative against cholera (Pereira, Mat. Med., II, pt. 1, p. 132). The grass (leaves, etc.) is suitable for paper making and it is said that 60,000 to 70,000 maunds are annually available in the Hissar district of the Punjab alone. When young the grass affords good fodder.' (*Watt's Commercial Products of India.*)

"It grows on the banks of rivers and marshes throughout the plains and lower hills of India, Burma, and Ceylon, ascending to 4,000 feet. No literature regarding its culture is available."

34931 to 34939.

From Poona, India. Presented by Mr. W. Burns, economic botanist, Agricultural College, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received February 28, 1913.

34931. ALYSICARPUS LONGIFOLIUS (Rottl.) Wight and Arn.

34932. ALYSICARPUS PUBESCENS Law.

34933. ALYSICARPUS RUGOSUS (Willd.) DC.

Related species of the above species of legumes are considered among the best Indian grazing plants.

34934. ANDROPOGON ANNULATUS Forsk.

34935. CHRYSOPOGON MONTANUS Trinius.

34936. INDIGOFERA GLANDULOSA Wendl.

34937. INDIGOFERA LINIFOLIA (L. f.) Retz.

34938. INDIGOFERA TRIFOLIATA Torner.

Distribution.—From the Himalayas, in northern India, where it ascends to an elevation of 4,000 feet, eastward and southward through China and the Malay Archipelago, to northern Australia.

34939. DACTYLOCTENIUM AEGYPTIUM (L.) Willd.
(*Eleusine aegyptiaca* Desf.)

34940. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

From Augusta, Ga. Purchased from the N. L. Willet Seed Co. Received February 27, 1913.

"*Whippoorwill.*"

34941. PISUM SATIVUM L. **Field pea.**

From Madison, Wis. Purchased from the L. L. Olds Seed Co. Received February 26, 1913.

"*Golden vine.*"

34942. OCHNA PULCHRA Hook.

From South Africa. Presented by Mr. J. Burtt Davy, government agrostologist and botanist, Union of South Africa, Department of Agriculture, Pretoria. Received February 18, 1913.

"A small ornamental tree; seeds yield oil. Frostless localities." (*Davy.*)

Distribution.—A shrub or small tree with pendulous racemes of orange-red berries found in the vicinity of Johannesburg, in the Transvaal region of South Africa.

34943. HARPEPHYLLUM CAFFRUM Bernh. **Kafir plum.**

From Cape Town, Union of South Africa. Presented by the chief conservator of forests. Received February 28, 1913.

"One of the prettiest evergreen shade trees to be seen in the gardens of Cape Town. Suitable for very windy situations and forms a very dense shade. The timber is said to resemble mahogany and is used for wagon making. The red, showy drupes have a pleasant acid taste, but little pulp, and are suitable for making preserves. The tree will stand some drought and is suitable for frost-free regions; has done well in California and particularly well in southern Florida, where trees introduced in 1902 are now 20 feet high." (*David Fairchild.*)

For previous introductions and description, see S. P. I. Nos. 9616 and 21706.

For an illustration of the *Harpephyllum caffrum* tree, as grown at Cape Town, Africa, see Plate II.

34944. BASANACANTHA SPINOSA (Jacq.) Schum.
(*Basanacantha armata* Hook. f.)

From San Jose, Costa Rica. Presented by Mr. Ad. Tonduz, botanist, National Museum. Received February 28, 1913.

"An indigenous rubiaceous tree or shrub occurring scattered on the banks of all the rivers, commonly loaded at all times with fruits the size of an apple. I have never seen this fruit soften. It is always hard; nevertheless, it is figured in some lists of edible fruits." (*Tonduz.*)

34948 to 34969. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

From Sapporo, Japan. Presented by Mr. Y. Takahashi, botanist and vegetable pathologist, Hokkaido Agricultural Experiment Station. Received March 6, 1913.

Seeds of the following:

34948. (No. 1.) Red.
34949. (No. 2.) Red.
34950. (No. 3.) Red.
34951. (No. 4.) Red.
34952. (No. 5.) Red.
34953. (No. 6.) Yellow.

34948 to 34969—Continued.

34954. (No. 7.) Brown.
34955. (No. 8.) Brown.
34956. (No. 9.) Brown.
34957. (No. 10.) Light green.
34958. (No. 11.) Dark brown.
34959. (No. 12.) Dark brown.
34960. (No. 13.) Black.
34961. (No. 14.) Black.
34962. (No. 15.) Black mottled.
34963. (No. 16.) Red and white.
34964. (No. 17.) Black mottled.
34965. (No. 18.) Gray.
34966. (No. 20.) Yellow and red.
34967. (No. 21.) Red.
34968. (No. 22.) Red.
34969. (No. 23.) Red.

34970 to 34972. DIOSPYROS KAKI L. f. **Persimmon.**

From Okitsu, Japan. Presented by Mr. T. Tanikawa, in charge, Horticultural Experiment Station, Government of Japan. Received March 6, 1913.

Cuttings of the following; quoted notes by Mr. Tanikawa:

34970.

"*Mishirazŭ* (*Aizŭ*). Fruit medium size, average weight one-half pound; shape round, flattened, the point sunken, with four shallow furrows; skin smooth, more or less tough; orange yellow in color; bloom white. The flesh is firm, not very juicy; of very good quality when the astringency is removed by processing."

34971.

"*Mishirazŭ* (*Sakŭshŭ*). Fruit medium large, average weight two-thirds pound; more or less oblate, slightly tapering at the apex; skin thin, smooth, orange-yellow; flesh fine, juicy, of a very good quality when the astringency is removed by artificial processing."

34972.

"*Fuji*, our famous mountain's name. Fruit large, average weight 1 pound or more, more or less conical in form; skin thin, very smooth, bright orange, red, or crimson; flesh fine, tender, very juicy, light yellowish brown, more or less astringent at first, but very sweet when they become soft. This fruit is of very good quality, and suited for dried fruit and for processing."

34973. DIOSPYROS KAKI L. f. **Persimmon.**

From Hiroshima, Japan. Presented by Rev. H. Loomis, American Bible Society, Yokohama. Received March 6, 1913.

"*Giombo*. This is the variety that produces the best dried persimmons in Japan." (*Loomis.*)

34974. CYPHOMANDRA BETACEA (Cav.) Sendt. **Tree tomato.**

From Buenos Aires, Argentina. Presented by Dr. Carlos Thays, director, Jardin Botanico. Received March 10, 1913.

"An evergreen semiwoody shrub, native of Peru. The egg-shaped and smooth-skinned fruit, produced in great abundance and in hanging clusters at the ends of the branches, is in season almost throughout the year, but chiefly from March to May (in Ceylon). At first greenish purple, it changes in ripening to reddish yellow. Some varieties are of a deep-purple color. The subacid succulent fruits are refreshing and agreeable when eaten raw, but their chief use is for stewing; they may also

be made into jam or preserves. The tree is a quick grower and commences to bear when two or three years old, remaining productive for several years." (*Macmillan, Handbook of Tropical Gardening.*)

"Mr. L. H. Bailey found that this shrub would bear the second or third year from seed when grown under glass in Michigan, and the experiment is worth repeating." (*Fairchild.*)

34975. ASPARAGUS sp. **Asparagus.**

From La Mortola, Ventimiglia, Italy. Presented by Prof. Alwin Berger, director, Botanic Gardens. Received March 7, 1913.

34976. LANSIUM DOMESTICUM Jack. **Duku.**

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received March 7, 1913.

For previous introduction, see S. P. I. No. 24431.

34977. SOJA MAX (L.) Piper. **Soy bean.**

(*Glycine hispida* Maxim.)

From London, England. Presented by Mr. Stuart R. Cope. Received February 20, 1913.

34978 to 34981.

From San Jose, Costa Rica. Presented by Mr. Ad. Tonduz, botanist, National Museum. Received March 5, 1913.

Quoted notes by Mr. Tonduz.

34978. ABUTILON sp.

"A shrub 1½ to 2 meters high, with heart-shaped leaves and yellow flowers, found in San Jose and Carbrenas."

34979. BOMAREA sp.

"Fruits found in the vicinity of San Jose. An ornamental with edible tubers."

34980. CALYPTRANTHES TONDUZII Donnell Smith.

"A myrtaceous fruit called *Guayabillo*, which yields a hard, fine wood. These trees, scattered throughout the praderas (country covered with meadows), are literally covered with yellow fruits, which have no use except that they may be eaten."

34981. NECTANDRA SANGUINEA Roland.

"Fruits of a large tree, from the banks of the river Virilla, which in the fresh state furnish a passably good reddish color."

34982. COCCOLOBIS sp.

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture. Received February 20, 1913.

"*Jarra.* Fruit tree, hot climate." (*Van der Laat.*)

34983 and 34984. CUCUMIS MELO L. **Muskmelon.**

From Afghanistan. Presented by Mr. Albert C. Jewett, through Mr. Edward J. Norton, American consul, Bombay, India. Received March 7, 1913.

34983 and **34984.** "Two varieties of the Kabul melon."

34985 and 34986. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

Received from Mr. H. N. Vinall, of the Bureau of Plant Industry, March 10, 1913.

34985. "McLean sorghum. Received from the Office of Sugar-Plant Investigations. To be grown for the purpose of classification and determination of forage value." (*Vinall.*)

34986. "Colman sorghum. Open-head type. Received from the Office of Sugar-Plant Investigations. To be grown for the purpose of classification and determination of forage value." (*Vinall.*)

34988 to 34990.

From Kew, England. Presented by Sir. David Prain, director, Royal Botanic Gardens. Received February 26, 1913.

Seeds of the following:

34988. ACER HELDREICHII Orphan.

Distribution.—A maple found on the slopes of Mount Parnassus, in Greece.

34989. CARAGANA DECORTICANS Hemsl.

An Afghan shrub or small tree discovered by Dr. Aitchison in the Kurrum Valley.

"The bark is said to be employed by the Afghans in the form of rings to slip over and hold the sheaths of their long knives in position, in lieu of brasswork; the surface takes a good polish, and when new resembles bronzed leather." (*Aitchison.*)

34990. CRATAEGUS PECKII Sarg. **Hawthorn.**

34991. CANAVALI ENSIFORME (L.) DC. **Jack bean.**

From Greenwood, Miss. Purchased from Mr. H. D. Kerr. Received March 8, 1913.

"The jack bean is a native of the West Indies and the adjacent mainland. In Jamaica, whence it first became well known, it is called the horse bean or the overlook bean. The horse bean of Europe is a very different plant. In Antigua it has been called the Babricou bean, and in this country has been designated the Pearson bean, and recently the wonder bean.

"The jack bean is a bushy, semierect annual plant, growing to a height of 2 to 4 feet. Its stems are rather coarse and become woody toward the base. The rather thickish leaves have a decidedly bitter taste. The flowers are purple, at least in all varieties so far introduced. The first blossoms are borne near the base of the stem, so that many of the pods hang low. When mature, the pods are hard and firm, 9 to 14 inches long, each containing 10 to 14 seeds. These are pure white, with a brown hilum. Ordinarily the roots are well tubercled, and the plant will withstand much drought. It is remarkably free from insects and fungous disease and but slightly affected by root-knot." (*C. V. Piper.*)

For further information, see separate from Circular 110 of the Bureau of Plant Industry, entitled "The Jack Bean and the Sword Bean," by C. V. Piper.

34992. ASTRAGALUS FALCATUS Lam.

From Paris, France. Presented by Vilmorin-Andrieux & Cie. Received February 26, 1913.

"This is a perennial, bunching legume, with fair seed habits; somewhat leafy; may be of value as a leguminous hay and forage crop in sections where clover and alfalfa do not succeed. Somewhat drought resistant." (*J. M. Westgate.*)

34993 to 35033.

From Chile. Collected by Mr. W. F. Wight, of the Bureau of Plant Industry. Received February 27, 1913.

The following material; quoted notes by Mr. Wight:

34993. ZEPHYRANTHES sp.

"(20a.) A bulbous plant with yellow flowers, growing in the sand near the seashore about 6 miles north of Vina del Mar."

Bulbs.

34994. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

"(21) *Palta.* The fruits from which these seeds were taken are sold in Valparaiso. They are purple skinned, rather small, and of very fair quality."

34995. ALSTROEMERIA sp.

"(19) Probably tubers of No. 18 (S. P. I. No. 34996), but without flowers; I can not be sure. They were found about 5 miles north of Vina del Mar."

34996. ALSTROEMERIA sp.

"(18) Seeds of a tuberous-rooted plant with attractive pink flowers. Very few seeds were found mature, but Dr. Söhrens promised to send seeds of this later; also, a still more handsome species, with red flowers. The latter I have seen only at 1,200 to 1,500 meters altitude above Santiago. The pink-flowered one occurs above Los Andes, above Santiago, and apparently the same in the hills above Valparaiso, where these seeds were gathered. The tubers of a white-flowered form are said to be edible and are sold in the market at Concepcion."

34997. AMYGDALUS PERSICA NECTARINA Aiton. **Nectarine.**

"(12) Nectarines with yellow flesh are very common in the markets of both Santiago and Valparaiso. These came from Santiago."

34998. CEREUS QUISCO Gay. **Quisco.**

"(17) Seeds of a cactus with reddish fruits, growing on the huge sand dunes about 6 miles north of Vina del Mar."

34999. CEREUS sp.

"(23) Seeds of a cactus gathered in the mountains at about 1,550 meters altitude, near Quebrada San Ramon, above Santiago. January 12, I saw fruits of probably the same species for sale at the railway station Llai Llai as I passed through."

35000. CUCUMIS MELO L. **Muskmelon.**

"(37) A large melon 12 inches or more long and of fair quality."

35001. CUCUMIS MELO L. **Muskmelon.**

"(39) A round melon, very good."

35002. CUCUMIS MELO L. **Muskmelon.**

"(40) Melon shaped like the fruit of an eggplant, but not of very good quality. It is impossible always to be sure of the quality of either fruit or melons, for they are often picked so green that the quality is ruined."

35003. CUCURBITA sp. **Squash.**

"(38) Seeds of a large squash I found in the market."

35004. CYTISUS sp.

"(15) On the hills above Valparaiso in very dry situations; possibly introduced, but growing among other plants certainly native."

34993 to 35033—Continued.

35005. FRAGARIA VESCA L. **Strawberry.**

"(22) Seeds of a wild Chilean strawberry sold in the market at Santiago. They are of very good quality and remarkably large for wild berries, many of them being over an inch long; also much more conical in shape than the wild berry of the eastern United States."

35006. JUGLANS REGIA L. **Walnut.**

"(36) Walnuts."

35007. LATHYRUS sp.

"(8) San Ramon, above Santiago, at 1,500 meters altitude. Said to have a very handsome flower."

35008. LOASA sp.

"(6) Herbaceous plant with attractive yellow flowers at San Ramon, above Santiago, at 1,500 meters altitude."

35009. OENOTHERA ODORATA Jacq. **Evening primrose.**

"(14) On the dry hills above Valparaiso. The flower is yellowish orange, and the species may be useful as an ornamental."

35010. OENOTHERA MOLLISSIMA L. **Evening primrose.**

"(16) Flowers similar to No. 14 (S. P. I. No. 35009), but this one grows very near the seashore, almost within reach of the spray."

35011. OPUNTIA sp. **Prickly pear.**

"(41) Seeds of the tuna cactus, fruits of which are very common both in the market and at the small shops in Valparaiso and Santiago. These came from Valparaiso."

35012 to 35016. PHASEOLUS VULGARIS L. **French bean.**

"All the varieties of beans I could find in Valparaiso."

35012. (31.)
35013. (32.)
35014. (33.)
35015. (34.)
35016. (35.)

35017. SOLANUM PSEUDOCAPSICUM L.

"(3) Fruits of Jerusalem cherry, which is fairly common along a roadside just outside Buenos Aires, Argentina."

35018. PISUM SATIVUM L. **Pea.**

"(29) Peas from a market woman, who saves her own seed. She said they were the best kind she knew."

35019. PRUNUS ARMENIACA L. **Apricot.**

"(10) Apricot seeds bought in the market at Santiago. The fruit was most excellent, and I am told a surprising number of seedling trees yield very good fruit. Seedling trees of peaches, plums, and apricots are very common.

35020. PRUNUS sp. **Plum.**

"(11) Seeds of a small yellow plum sold in the Santiago market. Not of excellent quality."

35021. SALVIA sp.

"(15a) On the hills above Valparaiso."

35022. SISYRINCHIUM sp.

"(9) Flowers of this not seen, but it may prove of interest. San Ramon, above Santiago, at 1,500 meters altitude."

34993 to 35033—Continued.

35023. SOLANUM sp.

"(13) Collected by the side of the Quebrada San Ramon. Very little seed was found and no tubers. It is probable, however, that the species, under other conditions, might produce tubers. Snow falls in winter at this altitude, 1,500 meters, yet the plants evidently pass the winter by thick underground rootstocks."

35024 to 35028. SOLANUM TUBEROSUM L. **Potato.**

35024. (24) "*Papa amarilla*, with white skin."

35025. (25) "*Papa blanca.*"

35026. (26) "*Papa amarilla*, with red skin."

35027 and 35028.

"Potatoes from the market at Santiago. The two numbers are said to come from different localities."

35027. "(27.)" **35028.** "(28.)"

Tubers.

35029. (Undetermined.)

"(4) Seeds of a shrub at Quebrada San Ramon, at 1,500 meters altitude."

35030. (Undetermined.)

"(5.)" See S. P. I. No. 35029 for description.

35031. (Undetermined.)

"(7) A very attractive vine with fairly large flowers. I have never seen it in cultivation. From San Ramon, at 1,500 meters altitude."

35032. ZEPHYRANTHES sp.

"(20) Seeds of a bulbous plant with yellow flowers, growing in the sand near the seashore, about 6 miles north of Vina del Mar."

35033. ALLIUM CEPA L. **Onion.**

"The kind they grow in Chile."

Bulbs.

35034 to 35037.

From Los Banos, P. I. Presented by Mr. C. F. Baker, University of the Philippines, College of Agriculture. Received February 19, 1913.

35034. PAHUDIA RHOMBOIDEA (Bl.) Prain. **Tindalo.**
(*Afzelia rhomboidea* Vidal.)

See S. P. I. Nos. 31586 and 32283 for previous introductions and description.

35035. PARKIA TIMORIANA (DC.) Merrill. **Cupang.**
(*Parkia roxburghii* Don.)

See S. P. I. Nos. 32284 and 34094 for previous introductions and description.

35036. ALBIZZIA ACLE (Bl.) Merrill. **Acle.**
(*Mimosa acle* Blanco.)

See S. P. I. Nos. 22793 and 32285 for previous introductions and description.

35037. PSYCHOTRIA LUÇONIENSIS (Cham. and Schl.) Vill.
(*Psychotria luzoniensis* Vill.)

"Fine small tree." (*Baker.*)

35039. CYMBOPETALUM PENDULIFLORUM (Dun.) Baillon. **Sacred ear flower.**

From Guatemala, Guatemala. Presented by Mr. George A. Bucklin, American consul general. Received March 13, 1913.

"*Orejuela.*" A very interesting annonaceous plant, the flowers of which when dried were used by the Aztecs to flavor their chocolate, and the identity of which has but recently been discovered by Mr. W. E. Safford, of the Bureau of Plant Industry. For a full account, see the annual report of the Smithsonian Institution for 1910, pages 427 to 431.

35040. BORASSUS FLABELLIFER L. **Palmyra palm.**

From Madras, India. Presented by Mr. H. E. Houghton, superintendent, Agri-Horticultural Society of Madras, through Mr. José de Olivares, American consul. Received March 14, 1913.

"An erect palm, 60 to 70 feet high, with a stout trunk and fan-shaped leaves, indigenous to the dry region of Ceylon, India, and Africa. It is naturally suited to a rather dry climate; is extensively cultivated for the fruit and leaves. The large black fruits are borne in a cluster at the base of the leaves. The nut contains a refreshing sap much relished as a cooling drink. The kernels or young seeds are much used as an article of food, being sold in large quantities in the bazaars during the months of April and May. The sap obtained from the flower spathes is collected in large quantities and either fermented and made into '*toddy*' or '*arrack*' (an intoxicating drink) or boiled down for making sugar or jaggery. The leaf blades are used for making fans, baskets, buckets, etc., while the leafstalks and midribs furnish an excellent brush fiber, which forms an article of export. To obtain the latter, the trees are stripped of all but three leaves once in two years. The trunk yields a hard and most durable timber and the husks are in demand for fuel. Among palms in the East the Palmyra ranks next in importance to the coconut, and the area under cultivation in Ceylon is estimated at approximately 40,000 acres, while that in Tinnevelly is said to be about 60,000 acres. It is propagated from seed, which is sown in situ in holes made in sandy soil. In about 10 years from sowing the palms should be in flower, when they may be used for drawing toddy and making sugar. When grown for fruit, an average return of about 3,500 nuts per acre may be obtained." (*Macmillan, Handbook of Tropical Gardening.*)

Distribution.—A tall palm often 70 feet high, cultivated throughout India and eastward through the Malay Archipelago; also in tropical Africa.

35041. LANSIUM DOMESTICUM Jack. **Duku.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 14, 1913.

For previous introduction, see S. P. I. No. 34976.

35042. MAMMEA AMERICANA L. **Mammee.**

From Santa Fe, Isle of Pines. Presented by Mrs. E. A. Haines. Received March 5, 1913.

35043. XIMENIA CAFFRA Sond.

From South Africa. Presented by Mr. J. Burtt Davy, government agrostologist and botanist, Union of South Africa, Department of Agriculture, Pretoria. Received March 15, 1913.

"*Zuur pruim.* An edible fruit useful for jellies. It grows in semiarid, subtropical localities, such as the Transvaal bush veld." (*Davy.*)

See S. P. I. No. 27015 for previous introduction.

35044 and 35045.

From Chile. Collected by Mr. W. F. Wight, of the Bureau of Plant Industry. Received February 27, 1913.

Seeds of the following; quoted notes by Mr. Wight:

35044. VICIA FABA L. **Broad bean.**

"(30) Beans that look very ordinary to me, but the market woman says they are extra fine and much prized by the English and Germans."

35045. SOLANUM sp.

"An attractive ornamental shrub, on the way from Mendoza to Los Andes, Chilean side, at probably 6,000 feet altitude. No more seed available."

35046. PRUNUS BRIGANTINA Villars.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 17, 1913.

See S. P. I. No. 34851 for previous introduction.

Scions.

35049 to 35057.

From St. Petersburg, Russia. Presented by Mr. Basil Benzin, Department of Agriculture. Received February 3–15, 1913.

"Most of the samples are from Semiryetchensk Government, northeastern part of Turkestan, with high plateau and moderate climate." (*Benzin.*)

Seeds of the following:

35049 and 35050. CHAETOCHLOA ITALICA (L.) Scribner. **Siberian millet.** (*Setaria italica* Beauv.)

"(26 and 27) Red Kursk millet."

"These appear to be fairly good samples of the orange-seeded foxtail millet, such as is ordinarily grown by the farmers of Russia." (*H. N. Vinall.*)

35051. HORDEUM DISTICHON NUTANS Schubl. **Barley.**

"(18) Two-row Kirghizian barley, from Tchimkent, Syr-Daria Government."

35052. HORDEUM VULGARE L. **Barley.**

"(19) A 6-row barley from Turbat, Syr-Daria Government."

35053. HORDEUM DISTICHON NUTANS Schubl. **Barley.**

"(100) Barley, unirrigated, from Pishpek District, Semiryetchensk Government."

35054 to 35056. PANICUM MILIACEUM L. **Proso.**

35054. "(23) Black proso from Merke, Syr-Daria Government."

35055. "(24) Black Turkestan proso from Pishpek District, Semiryetchensk Government."

35056. "(25) Red proso from Aulie-ata, Syr-Daria Government."

35037. LINUM USITATISSIMUM L. **Flax.**

"(133) Flax, irrigated, from Tashkend, Syr-Daria Government."

35058 to 35074.

From Erfurt, Germany. Purchased from Haage & Schmidt, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received March 20, 1913.

Seeds of the following:

35058. CHLORIS DISTICHOPHYLLA Lagasca.

(6974.)

35058 to 35074—Continued.

35059. CHLORIS GRACILIS Durand.
(6975.)

35060. CHLORIS DISTICHOPHYLLA Lagasca.
(6976.)

35061. VICIA ERVILIA (L.) Willd.
(1663.) Var. *abyssinica.*

35062. ECHINOCHLOA CRUSGALLI (L.) Beauv.
(*Panicum crusgalli* L.)
(7041.)

35063. CHAETOCHLOA ITALICA (L.) Scribner.
(*Setaria italica* Beauv.)
(7047.)

35064. TRICHOLAENA ROSEA Nees.
(*Panicum teneriffae* R. Br.)
(7052.)

35065. PANICUM MILIACEUM L.
(7053.)

35066. PASPALUM STOLONIFERUM Bosc.
(7055.)

35067. PASPALUM NOTATUM Fluegge.
(*Paspalum distichum* L.)
(1602.)

35068. PASPALUM DILATATUM Poir.
(1603.)

35069. POLYPOGON sp.
(7070.)

35070. POLYPOGON sp.
(7072.)

35071. CHAETOCHLOA ITALICA (L.) Scribner.
(*Setaria italica* Beauv.)
(7079.)

35072. TRICHOLAENA ROSEA Nees.
(*Panicum teneriffae* R. Br.)
(7089.)

35073. OSTERDAMIA MATRELLA (L.) Kuntze.
(*Zoysia pungens* Willd.)
(7110.)

35074. CHLORIS ELEGANS H. B. K.
(6973.)

35075 to 35077. ELEUSINE CORACANA (L.) Gaertn. **Ragi.**

From Bangalore, Mysore, India. Presented by Mr. H. V. Krishanayya, Acting Officer in Charge of the Agricultural Department. Received March 26, 1913.

Seeds of the following; see S. P. I. No. 34768 for description:

35075. "*Dodda Ragi.*"

35075 to 35077—Continued.

35076. "*Goodubile*" or "*Jenumuddle Ragi.*"

35077. "*Majjige Ragi.*"

"This variety is not grown except in a few lines in large fields here and there. It is not held in such high estimation as the other varieties." (*Krishanayya.*)

35078 to 35082. NICOTIANA RUSTICA L. **Tobacco.**

From St. Petersburg, Russia. Presented by Mr. Basil Benzin, Department of Agriculture. Received March 25, 1913.

35078. "*Makhorka lokvikha.*"

35079. "*Bakun sasnitzniĭ.*"

35080. "*Tchvitzent kremenetzkiĭ.*"

35081. "*Bakun menskiĭ.*"

35082. "*Kok tumbeki tashkentsky.*"

35083. PHOENIX DACTYLIFERA L. **Date.**

From Tunis, Africa. Purchased from Mr. A. Martel, Deggache, through Mr. T. H. Kearney. Received February 13, 1913.

"*Menakher.*"

"These dates were imported to secure seeds for distribution to date breeders in the Salton Basin, in southeastern California. At least one promising Menakher seedling fruited in 1913, and a few enthusiastic breeders are specializing in this celebrated variety." (*Walter T. Swingle.*)

See S. P. I. 29391 for previous introduction.

For an illustration of the Menakher date palm, as grown in Tunis, see Plate III.

35084. DIOSPYROS MONTANA Roxburgh.

From Colombo, Ceylon. Presented by Dr. C. Drieberg, secretary, Ceylon Agricultural Society. Received March 27, 1913.

See S. P. I. Nos. 31644 and 32799 for previous introductions.

35085 to 35087. MEDICAGO SATIVA L. **Alfalfa.**

From Novospassko, Syzran-Riazan R. R., Russia. Purchased from Mr. A. Woeikoff by Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received March 26, 1913.

35085. (No. 1.)

35086. (No. 2.)

35087. (No. 3.)

35088 to 35115.

From La Mortola, Ventimiglia, Italy. Presented by Mr. Alwin Berger, director, Botanic Gardens. Received February 27, 1913.

Seeds of the following:

35088. ACACIA PYCNANTHA Bentham. **Golden wattle.**

"Except in very dry localities, this species is common to nearly all districts of South Australia north of Encounter Bay and is occasionally to be met with along the coast from Kingston to the Glenelg River. Its principal habitat, however, and the one where the thoroughly tropical form and the largest trees of the species are found, is in the Adelaide hills and plains from Encounter Bay to Clare. For propagation purposes seeds should be obtained, if possible,

35088 to 35115—Continued.

from trees grown within these limits. This is the "broad-leaved wattle," sometimes called "golden, black, or green wattle," and is one of the richest tanning barks in the world, and analysis shows it to contain 46.47 per cent tannic acid. The powder from the bark of the limb is generally of a lighter color than that obtained from the butt of the tree. The average height of this tree runs from 20 to 25 feet, with diameters from 6 to 10 inches." (*J. H. Maiden, Wattles and Wattle Barks.*)

35089. ASPARAGUS COOPERI Baker. **Asparagus.**

"This asparagus has nothing particularly striking about it, either from a botanical or horticultural point of view. The flowers are very small and not abundantly produced, the firm, twining, wirelike main stem sending out very copious slender branches at right angles, and these, again, still more slender, spreading, threadlike ultimate branchlets, from which the numerous minute needlelike cladodes spring in dense close clusters. This asparagus was found by Mr. MacOwan in the woods on the slope of Mount Boschberg at an elevation of 4,000 feet above the sea level. This asparagus climbs to a height of 10 to 12 feet and has a shrubby terete stem 1½ to 2 inches in thickness at the base." (*Gardeners' Chronicle, June 27, 1874.*)

Introduced for the asparagus-breeding collection.

35090. BESCHORNERIA sp.

This was received as *Beschorneria roseana*, a name for which no place of publication has yet been found.

35091. BESCHORNERIA YUCCOIDES C. Koch.

35092. BETULA sp. **Birch.**

(Wilson No. 71. China.)

35093. BUDDLEIA NIVEA Duthie.

"A new species from central China and of doubtful promise. The flowers are not so striking as some of the species recently introduced; but this defect is compensated for by the great beauty of the foliage, the whole undersurface of which is, together with the young wood and leaves, covered with a dense white woolly tomentum. The flowers in tail-like panicles at the end of the branch are rose purple in color, individually small, but in a mass conspicuous." (*Hortus Veitchii.*)

35094. CLERODENDRUM sp.

(Wilson No. 216.)

35095. × CRATAEGUS CARRIEREI W. J. Bean. **Hawthorn.**

"This small tree is of doubtful origin, all the individuals having been obtained from single seedlings, which appeared spontaneously several years ago in the nursery of the Jardin des Plantes, in Paris. In some ways it resembles some Mexican species; and it might be Mexican but for the fact of its hardiness, which would seem to indicate a colder home than Mexico. The fact that the seedlings are identical with the parent seems to preclude the idea of hybrid origin; but whatever this may have been, *C. carrierei* is an ornamental plant of the first class. It is covered with thick, pointed, lustrous leaves which, when turning from green to the slightest yellow tinge, set off to advantage the large light orange-red oblong fruits, which are produced in great abundance." (*Bulletin No. 12, Arnold Arboretum.*)

35096. CYPHOMANDRA FRAGRANS (Hook.) Sendt. **Tree tomato.**

Distribution.—A tall shrub with very fragrant flowers found in South America from Argentina to Guiana.

FRUITING TREE OF THE MENAKHER DATE PALM. (S. P. I. No. 35083.)

One of the rarest varieties of Tunis, known only in the Jerid Oasis, where it has become rare. A very large date of excellent flavor and adapted to cultivation in the Southwest. An Arab is leaning against the Menakher palm. (Photographed by T. H. Kearney Nov. 2, 1904; No. 2274.)

A NEW PALMETTO (INODES EXUL O. F. COOK), DISCOVERED BY MR. COOK AT VICTORIA, TEX. (S. P. I. No. 35116.)

The two tall palms on the left are *Washingtonia filifera*, while the two on the right are of the new species, probably of Mexican origin. This Victoria palmetto may find a place in the front rank of ornamental palms. (Photographed by O. F. Cook and C. B. Doyle.)

35088 to 35115—Continued.

35097. ECHIUM WILDPRETII Pearson.

"This seed made its debut in Kew in 1899. It was raised from seed sent in by Mr. Wildpret, Curator of the Botanic Gardens, Orotava, Teneriffe. This Echium is very attractive, even before the flower spikes open; their leaves, covered with silky hairs, after the manner of the silver fir, form a handsome rosette 18 inches high and through. The flower spike adds another 2 feet to this height, and when the purplish-pink flowers are all open, the plant is singularly handsome. The altitude at which it grows wild at Teneriffe has not yet been recorded, but is probably some distance above sea level, and therefore the plant ought to be a good one for open-air gardening, if protected from the frosts." (*Gardeners' Chronicle, October 26, 1912.*)

35098. ENTELEA PALMATA Lindl.

35099. HYPERICUM HOOKERIANUM Wight and Arn. **St. John's-wort.**

"(Wilson No. 1355.) A native of northern India, Nepal, and the Himalayas, at an elevation of 6,000 to 12,000 feet, found on the hills about Mufflong, Assam, by Thomas Lobb, through whom it was introduced. It forms a neat bush, with evergreen leaves and large rich-yellow flowers, unfortunately not perfectly hardy in all localities." (*Hortus Veitchii, p. 400.*)

35100. INDIGOFERA AMBLYANTHA Craib.

(Wilson No. 786. China.)

"From Ichang, western Hupeh, at altitudes of 300 to 1,000 meters, December, 1907." (*Sargent, Plantae Wilsonianae, vol. 2, p. 99.*)

35101. JASMINUM FLORIDUM Bunge. **Jasmine.**

(Wilson No. 789.) "The flowers are yellow, one-half an inch in diameter, in lax cymes; calyx teeth long, subulate, leaves alternate, pinnately trifoliate. It is from China and Japan, and is considered a hardy ornamental shrub in England." (*Nicholson, Dictionary of Gardening.*)

35102. NEPHELIUM TOMENTOSUM F. Mueller.

Distribution.—A small tree found along streams in Queensland and New South Wales, in Australia.

35103. PASSIFLORA ALBA Link and Otto. **Passion fruit.**

"A charming species from New Grenada, with pure white flowers. The leaves are glabrous, glaucescent beneath, somewhat cordate at the base, 5 nerved, trilobed; lobes oval, somewhat glandularly serrated at the base; petioles biglandular in the middle. This Passiflora is a native of Brazil. The name *P. atomaria* was given by Planchon to a form of this species, in which the petals were speckled with small purplish spots." (*Gardeners' Chronicle*, 1883.)

35104. PASSIFLORA BANKSII Benth. **Passion fruit.**

"It is an evergreen climber and has scarlet flowers. This Passiflora comes from New South Wales and Queensland." (*Guilfoyle, Australian Plants, p. 277.*)

35105. PHOENIX sp. **Palm.**

This date palm, apparently a hybrid of *Phoenix canariensis*, perhaps with *P. dactylifera*, was received as *Phoenix rivieri* Hort. Mort., a name used in Berger's Hortus Mortolensis, but not published.

35106. PILOCARPUS PENNATIFOLIUS Lemaire. **Jaborandi.**

Distribution.—A shrub with long spikes of red flowers, found in the vicinity of Cujaba, in the province of Matto Grosso, in Brazil.

35088 to 35115—Continued.

35107. PINUS PYRENAICA Lapeyr. **Pine.**

"The geographical range of *Pinus pyrenaica* may be stated in general terms to extend through the Mediterranean region from the Pyrenees to the Levant and Asia Minor, whence it spreads eastward through northern Persia into Afghanistan as far as Herat. It occurs on many of the mountain ranges throughout this region at altitudes of 2,000 to 6,000 feet; in the more densely inhabited parts of the Mediterranean littoral it is seen only in groups, separated by a considerable interval from each other; on the lower slopes of the Cilician Taurus it forms extensive forests, for the most part unmixed with other trees. The economic value of this pine is considerable in those districts where it is still abundant, as in Cilicia and the adjacent parts of Asia Minor. To the inhabitants of this region it supplies the best timber for building and many other constructive purposes, but as the forests are under no kind of supervision or control by the government of the country, the trees are felled in a most reckless manner and with a most deplorable waste of material. Still greater destruction is caused by the turpentine collectors, who mutilate and render useless every tree they attack." (*Veitch's Manual of Coniferæ.*)

35108. PITTOSPORUM PHILLYRAEOIDES DC. **Butter bush.**

"This tree is sometimes called butter bush, native willow, and poison berry, and is said to yield a gum somewhat similar to gum arabic, and even superior to it. The seeds are very bitter to the taste, yet the aborigines in the interior were in the habit of pounding them into flour for use as food. It is found in all the colonies of Australia, with the exception of Tasmania." (*Maiden, Useful Native Plants of Australia, pp. 53 and 220.*)

35109. RHUS PUNJABENSIS SINICA (Diels) Rehder and Wilson.

(Wilson No. 275. China.)

"From woodlands south of Ichang, western Hupeh, at altitudes of 1,000 to 1,600 meters, September, 1907. A small tree 5 to 8 meters tall, with whitish flowers and crimson fruit." (*Sargent, Plantae Wilsonianae, vol. 2, p. 176.*)

35110. ROSA sp. **Rose.**

(Wilson No. 619. China.)

35111. ROSA sp. **Rose.**

(Wilson No. 666. China.)

35112. ROSA sp. **Rose.**

(Wilson No. 666–A. China.)

35113. PASSIFLORA MANICATA (Juss.) Persoon. **Passion fruit.**
(*Tacsonia manicata* Juss.)

Distribution.—A climbing vine with red flowers found in the vicinity of Loja, Ecuador, and in Peru and Colombia.

35114. PSEDERA HENRYANA (Hemsl.) Schneider.
(*Vitis henryana* Hemsl.)

"The habit of this plant is that of the common Virginia creeper, but the color is more gorgeous. The young foliage is a rich scarlet; the older foliage has a bronzy tint, like that of *Leea amabilis*. The leaf lobes, both in the young scarlet stage and in the adult form, have a silvery band along the midrib and side branches. The plant is a native of Hupeh and Ichang, central China, where it was discovered by Dr. Henry. It is quite hardy." (*Gardeners' Chronicle, p. 309.*)

35115. AMPELOPSIS DELAVAYANA Planchon.

See S. P. I. No. 34592 for previous introduction.

35116. INODES EXUL O. F. Cook. **Palmetto.**

From Victoria, Tex. Presented by Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 26, 1913.

"This is a new palmetto occurring in cultivation in some portions of Texas, and especially at Victoria, whence this material was received. It is described as being related to some of the other Mexican forms of this genus, which suggests that it probably originated in Mexico. Some of the palmettos of this new species are really magnificent, with their stately crowns of large vivid-green leaves, firmly supported on massive petioles, also of living green. Even the trunk appears green, for the sheathing leaf bases retain their color.

"The crown is more ample than most palms, because of the firm texture and persistent vitality of the leaves. This lends an impression of extreme vigor and luxuriance and adds greatly to the decorative effect. In short, it seems not unlikely that the Victoria palmetto may find a place in the front rank of ornamental species.

"This species is distinguished from related species by its large size, the deep-green foliage, the thickened branchlets of the inflorescence, the solitary fruit, and the large seed, not wrinkled above nor hollowed out below.

"At Victoria these cultivated palmettos have passed, without any damage to the leaves, through freezes that killed many of the wild *Acacia farnesiana*. Though certain other palms are able to survive such temperatures and are worthy of being planted for special purposes, the mutilation of the leaves means a loss of decorative value for several months. Frost-proof foliage is especially desirable in an ornamental species." (*Abstract from O. F. Cook's article, "A New Ornamental Palmetto in Southern Texas," Circular 113, Bureau of Plant Industry.*)

For an illustration of this new species of palmetto, as grown in Texas, see Plate IV.

35117 to 35120. DIOSPYROS KAKI L. f. **Persimmon.**

From Wakamatsu, Japan. Presented by Rev. Christopher Noss, D. D., at the request of Rev. H. Loomis, Yokohama, Japan. Received March 30, 1913.

35117. "*Gosho.* Medium, nonastringent."

35118. "*Kōshu maru.* Late, nonastringent."

35119. "*Myōdō.* Late, nonastringent."

35120. "*Ōhassaku.* Early, nonastringent."

35121. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Caracas, Venezuela. Presented by Mr. H. Pittier, of the Bureau of Plant Industry. Received March 31, 1913.

"This aguacate is called *Veranero* on account of the crop coming at the end of the dry season, while the high time for the other varieties growing about Caracas is August. It is smaller than the common varieties coming from the tierra caliente, which can also be obtained now in the market. Besides, its outer color is characteristically yellow and it has a special very fine flavor. As it grows here up to above 1,400 meters, it should do well in southern California and in other parts of the South where the rain is somewhat scarce." (*Pittier.*)

For an illustration of the fruit of the Veranero variety of avocado, as grown in Venezuela, see Plate V.

35122. MEDICAGO SATIVA L. **Alfalfa.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 24, 1913.

35126 to 35131.

From Glasnevin, Dublin, Ireland. Presented by the Royal Botanic Gardens. Received March 24, 1913.

Seeds of the following:

35126. ACONITUM SCAPOSUM PYRAMIDALIS Franch. **Monkshood.**

"A strong-growing hardy herbaceous perennial with foliage typical of the genus and pyramidal spikes of dark-blue flowers crowded on the upper two-thirds of a scape 2 to 2½ feet in height. The flowers consist of a long blue spur with little or no hood, and the small petals are whitish tipped with green. It is a native of central China." (*Hortus Veitchii, p. 413.*)

35127. CLEMATIS HERACLEAEFOLIA DC. **Clematis.**

"This is a distinct and curious species. The plant is sarmentose, but not climbing; its branches, 4½ to 6 feet long, hang from the rocks or creep over the soil. The leaves are large, 9 inches long and 8 inches broad, composed of 5 leaflets, the terminal being much larger than the other. They are dentate and of a deep-green tint, somewhat shiny. The flowers are very numerous, borne in large panicles, rather small, of the same form and size of those of *C. vitalba*, but of a light-blue color. They seed rarely, but the species may be easily increased by grafting. The profusion of the little bluish flowers in immense racemes from August till November makes the plant a very decorative one. It grows in shady or sunny positions and in any good soil." (*Gardeners' Chronicle, January 22, 1898.*)

35128. COTONEASTER SIMONSI Baker.

"This Himalayan shrub is certainly a fine one and should encourage lovers of trees and shrubs to plant the species more frequently in positions where the individual character of the tree will be seen to advantage when it attains something like its full growth. When trained against a wall, the branches of this species often reach heights of from 10 to 12 feet. It is sometimes used, however, as an edging to garden paths where it gets neither support nor shelter. *C. simonsi*, though not exactly erect, is self-supporting, and when so grown is about 6 feet high and 4 feet through. It fruits freely, but unfortunately it is not perfectly evergreen, although it withstands the milder winters. It is sometimes so thickly covered with bright red berries that it becomes scarcely possible to place one's finger between them." (*Gardeners' Chronicle, April 16, 1910.*)

35129. DELPHINIUM DUHMBERGI E. Huth. **Larkspur.**

Distribution.—An herbaceous perennial found in central Russia, the Altai region of Siberia, and in Turkestan.

35130. EREMURUS TURKESTANICUS Regel.

"This species of Eremurus is not a very handsome one. It has a loose spike with white flowers greenish on the outside; short purple-black filaments; long red anthers. The pedicels are erect and very stout at the top. The capsule is glabrous, pyriform. The seeds are gray and larger than the brown seeds of *E. altaicus*." (*Gardeners' Chronicle, January 10, 1905.*)

35131. VIOLA CORNUTA L. **Horned violet.**

"*Alba.* Among the foremost of our useful bedding plants this one holds an honorable position. The constitution of the plant is good, and it appears capable of withstanding alike both dashing wind and pelting rain, and neither tropical sunshine nor long-continued drought affect it." (*Gardeners' Chronicle, October 7, 1871.*)

THE VERANERO AVOCADO (PERSEA AMERICANA MILL.) FROM CARACAS, VENEZUELA.
(S. P. I. No. 35121.)

A variety ripening its crops in March, at the end of the dry season; smaller than the August-ripening varieties, but of a characteristic yellow color and of a special, very fine flavor; grows at 1,400 meters altitude. Introduced through H. Pittier. (Photographed by Mr. Pittier, Crop Acclimatization No. 15536.)

ROOT AND VINE OF THE YAM BEAN (CACARA EROSA (L.) KUNTZE, FORMERLY KNOWN AS PACHYRHIZUS ANGULATUS RICH.). (S. P. I. No. 35135.)

A rampant, luxuriously growing vine, which produces underground starchy roots of great size. William Harris, of Jamaica, proposes it as a rival for the manihot or cassava as a commercial starch producer. Its pods are also edible, and its production of foliage and quickly decaying vines has suggested its use as a cover crop in Florida. (Photographed by David Fairchild, at the Miami Garden, Fla., Feb. 2, 1913; No. 10522.)

35132. CYMBOPOGON JWARANCUSA (Roxb.) Schultes. **Ginger grass.**
(*Andropogon jwarancusa* Roxb.)

From Dehra Dun, India. Presented by Mr. R. S. Hole, forest botanist, Forest Research Institute and College. Received March 26, 1913.

"It is believed that *Cymbopogon schoenanthus* Spreng. (*C. laniger*) is merely an edaphic variety of this species, the commercial oil yielded by both being the same" (*Hole.*)

35133. ACTINIDIA CHINENSIS Planchon. **Yangtaw.**

From Chelsea, London, England. Purchased from James Veitch & Sons. Received March 29, 1913.

These are cuttings from the female plant which ripened fruit in England in 1911 and are the first known female plants of this promising fruit-producing species to be introduced into this country. The male flowers and the general appearance of this plant were illustrated in Circular No. 110 of the Bureau of Plant Industry.

35134. CACARA EROSA (L.) Kuntze. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Jamaica. Presented by Rev. C. N. Field, Boston, Mass. Received March 31, 1913.

"Yam beans from Jamaica." (*Field.*)

See S. P. I. No. 33258 for previous introduction and description.

35135. CACARA EROSA (L.) Kuntze. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From San Jose, Costa Rica. Presented by Mr. Rafael Arias C., through Mr. J. E. van der Laat, Director of the Department of Agriculture. Received March 27, 1913.

"*Jicama* of San Salvador. This is a leguminous plant with edible roots, sweet taste, of the size of a child's head." (*Van der Laat.*)

See S. P. I. Nos. 33258 and 35134 for previous introductions.

For an illustration of the root and vine of *Cacara erosa*, see Plate VI.

BOTANICAL NOTE AND PUBLICATION OF A NEW NAME.

PLANT LISTED IN THIS INVENTORY.

34817. CHAETOCHLOA LINDENBERGIANA (Nees) Hitchc.

(*Panicum lindenbergianum* Nees, Flor. Afr. Austral., p. 47, 1841.)

(*Setaria lindenbergiana* (Nees) Stapf, Flora Capensis, vol. 7, p. 422, 1899.)

Seeds of this South African grass were received under the name *Setaria lindenbergiana* Stapf. The generic name Chaetochloa is now used for this genus. *Chaetochloa lindenbergiana* seems never to have been published, and it is necessary to adopt it here. (*A. S. Hitchcock.*)

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1913.

(No. 37; Nos. 36259 to 36936.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1913 (NO. 37: NOS. 36259 TO 36936).

INTRODUCTORY STATEMENT.

This inventory records, among other plant material imported, the collections made by three separate expeditions which were sent out by this office to foreign countries.

An expedition composed of Mr. P. H. Dorsett, of this office, Mr. A. D. Shamel, physiologist, of the Office of Horticultural and Pomological Investigations, and Mr. Wilson Popenoe, of this office, was, during the time covered by this inventory, exploring in southern Brazil. This expedition left Washington on October 4, 1913, and made a careful survey of the navel-orange region around Bahia and also a study of orange growing around Rio de Janeiro. Its object was to find, if possible, the origin of the Bahia navel orange and to discover strains of this remarkable orange which might prove more productive or better in other respects than varieties which have originated in California from the cuttings introduced into North America in 1870. In addition to securing bud wood of promising strains of this orange which have originated in Bahia through bud variation, the expedition secured the stocks (laranja da terra, S. P. I. No. 36636) upon which the navel orange is grown in its own home. Strong evidence was also found that the Bahia navel originated, probably in Bahia itself, as a bud sport from the Selecta orange, which has been grown there since the earliest days of orange culture in Brazil. Shipments of the fruit of the Bahia orange were successfully made, and orange specialists were given an opportunity to compare the Bahia fruit with the best California-grown navels. The former are characterized by their light greenish yellow color and milder acidity. They are sweeter and perhaps juicier, but lack sprightliness. They might meet with favor among those who prefer a sweet orange, but on account of their paler color would not attract favorable attention in our markets. Whether the new and vigorous Bahia strains of the navel orange introduced (such as S. P. I. Nos. 36689 and 36691) will fruit in California over a longer period of the

NOTE.—This bulletin is a record of new or little-known seeds or plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

year or prove otherwise more valuable will require several years to determine, but it seems probable that out of these new importations new and valuable strains will come.

As further results of this Brazilian expedition covered by this inventory may be mentioned the discovery of the Rosa mango at Rio de Janeiro, the showiest and one of the best mangos in that region (S. P. I. Nos. 36688 and 36841, Pl. IV), and the interesting fruit known as the jaboticaba. This latter, curiously enough, although one of the favorite fruits of the Brazilians, appears to have attracted little or no attention in other parts of the world, notwithstanding its delicious character and the remarkable way in which the fruits are borne on the trunk and limbs of the tree. (S. P. I. Nos. 36702 and 36888. Reproductions from photographs appeared in "Plant Immigrants," No. 92, December, 1913.)

Prof. S. C. Mason, of the Office of Crop Physiology and Breeding Investigations, prosecuted an extended study of the date-palm varieties of Egypt and Nubia, visiting the Oases of Dakhleh and Khargeh, where he established the identity of the long-sought "Wahi" with the Saidy, the choice export date of the Libyan Oases. A visit to Merowe, capital of the Province of Dongola, Sudan, was a very satisfactory and profitable trip. Through the unusual courtesies extended to him by Governor Jackson and the British officials generally, in Egypt, he secured as gifts from the important sheiks to the American Government, or by purchase, date offshoots of rare and valuable varieties. The Gondeila (S. P. I. No. 36827), one of the choicest dry dates; the Bentamoda (S. P. I. No. 36818), which Prof. Mason thinks will rank with the Deglet Noor and Menakher in quality; the great staple food date Barakawi (S. P. I. No. 36826), a variety as hard as bone but softening quickly in water; and the Kulma (S. P. I. No. 36828), which reminds one of the Moroccan variety, the Tafilelt, are among those described in this inventory.

In the governor's garden at Merowe Prof. Mason discovered a subtropical plant, *Dodonaea viscosa* (S. P. I. No. 36813), which will be tested in Florida and California as a new hedge plant.

The collections of Mr. Frank N. Meyer, agricultural explorer of this office, during the three months covered by this inventory, were for the most part made in the Chihli Province of China. They include large-fruited varieties of the Chinese walnut (S. P. I. Nos. 36662 and 36663), suited, he thinks, for the lower Rocky Mountain region; a species of Chinese chestnut, *Castanea mollissima* (S. P. I. No. 36666), which, while it does not form a large tree, bears excellent nuts and is seemingly more resistant there to the bark disease (*Endothia parasitica*) than our American chestnut is here; a wild hazelnut of good quality (S. P. I. No. 36726), occurring at an elevation of 5,000 to 7,000 feet, for trial in cool regions in America and

for breeding purposes; an edible wild grape, *Vitis amurensis* (S. P. I. No. 36753), from the Little Wu Tai Mountains, which appears not yet to have been hybridized with American or European grapes; an unusually vigorous form of wild peach, said to be a hybrid (S. P. I. No. 36665); three dwarf flint varieties of maize, ripening in 8 to 10 weeks (S. P. I. Nos. 36667 to 36669); dwarf sorghum, growing not over 3 or 4 feet high, for short-season regions (S. P. I. Nos. 36670 to 36672); three new wild roses (S. P. I. Nos. 36857 to 36859) from the Little Wu Tai Mountains, for the use of American rose breeders; three varieties of Chinese jujubes of good quality (S. P. I. Nos. 36852 to 36854); four species of wild asparagus, one of which produces edible shoots (S. P. I. Nos. 36766 to 36769); a variety of the kohl-rabi, which weighs as much as 25 pounds (S. P. I. No. 36770); a variety of the plum species, *Prunus salicina* (S. P. I. No. 36804), which produces a fruit said to be the size of an apple, suited, according to Mr. Meyer, to the cooler sections of the United States; a biennial species of Artemisia (S. P. I. No. 36797), which the Chinese use as a stock upon which to graft chrysanthemums, suggested as of value in the North where the nights are too cool and the summers too short to raise chrysanthemums out of doors; and from the Little Wu Tai Mountains 39 species of shrubs and ornamental plants (S. P. I. Nos. 36726 to 36764), many of which will doubtless be of value around the farm homes and in the city dooryards of the Northwest.

Through the constantly growing circle of foreign and domestic friends of plant introduction the following important importations have been made:

A variety of Mexican avocado, to which the writer's attention was directed, found by Postmaster General Burleson growing in the little Mexican village of Lagas, at 5,000 feet altitude (S. P. I. No. 36687); a collection of spring and winter wheats from Turkestan (S. P. I. Nos. 36498 to 36527), sent by Dr. Richard Schroeder, who believes they should do especially well in California and Utah, where summer rains are rare; four varieties of the papaya (S. P. I. Nos. 36275 to 36278) from Minas Geraes, Brazil, where a single seedling produced by actual count 200 fruits in 30 months; four independent shipments of Korean ginseng seed (S. P. I. Nos. 36282, 36596, 36716, and 36900); the Quina de Pernambuca, a small yellow-flowered tree which will stand light frosts and which is used like cinchona as a medicinal plant (S. P. I. No. 36661); the ilama, a red-fleshed anona from Tlatlaya, Mexico (S. P. I. No. 36632); a collection of soy, mung, and adzuki beans from Harbin, Manchuria (S. P. I. Nos. 36914 to 36923); a collection of sorghum varieties from German East Africa (S. P. I. Nos. 36610 to 36616); a barberry with edible fruit from the foothills of the Cordilleras of Argentina (S. P. I. No. 36626); a yellow Ussurian plum (S. P. I. No. 36607), which will probably prove hardy

in the Northwest and which, because of its fine characteristic flavor, will be of use in hybridization experiments in that region; two Guatemalan varieties of avocado, originating from seed introduced into Hawaii many years ago by Admiral Beardsley (S. P. I. Nos. 36603 and 36604); seeds of *Prunus salicifolia* (S. P. I. No. 36371), a wild species which, according to Mr. W. F. Wight, is considered promising in Peru as a stock for the sweet cherry; the Shalil, probably a hard-fleshed peach, from the Kurram Valley in the Northwest Frontier Province, India (S. P. I. No. 36485); the madronho tree of the Canary Islands, a species which is gradually becoming rare, but which as a shade tree in Naples is strikingly beautiful (S. P. I. No. 36529); the Mu-yu, a south Chinese species of wood-oil tree, *Aleurites montana* (S. P. I. No. 36897), from Hongkong, of special interest because a larger proportion of its flowers are reported to be fertile than is the case in the central Chinese species which is now established in this country; a collection of Chinese corn (S. P. I. Nos. 36889 to 36895) made by Dr. Yamei Kin in the Chihli Province; nuts of the palm *Bactris utilis* (S. P. I. No. 36573), which when cooked have much the taste of potatoes and form one of the principal foods of the Indians of Costa Rica around San Jose and Cartago; the white sapote tree, *Casimiroa edulis* (S. P. I. No. 36602, Pl. III), from Sierra Madre, Cal., where the severe frost of 1913 caught only a few of the blossoms; a near relative of the chayote vine, *Polakowskia tacaco* (S. P. I. No. 36592, Pl. II), which forms one of the primitive foods of the Indians of Costa Rica and has been incorporated by the Spanish Costa Ricans in their menu; a perennial rice from Senegal, West Africa, discovered recently by M. Ammann, of the Jardin Colonial at Nogent sur Marne, France (S. P. I. No. 36533); a collection of strains of alfalfa, gathered together at Poona, India, from various parts of British India (S. P. I. Nos. 36551 to 36560); the fruit tree *Rollinia orthopetala*, which grows on soil which is often flooded for a considerable period of time at Para, at the mouth of the Amazon, and which produces a fruit similar to the cherimoya (S. P. I. No. 36561, Pl. I); and a hybrid of superior excellence between the cherimoya and the sugar-apple, produced by Mr. Edward Simmonds at the Miami Field Station (S. P. I. No. 36562).

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory, as of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 4, 1915.

INVENTORY.

36259. SCHINUS TEREBINTHIFOLIUS Raddi.

Grown at the Plant Introduction Field Station, Miami, Fla., under Station No. 115, from seed received from the Hawaii Agricultural Experiment Station, through Mr. P. J. Wester, in 1909.

Medium-sized, ornamental, evergreen anacardiaceous tree, native of Brazil, with very striking foliage, highly prized for avenue and lawn planting in mild-wintered regions. Similar to *S. molle*, but with stiffer branches and leaves larger and darker green.

Plants.

36260. KARATAS PLUMIERI Morr.

From Caracas, Venezuela. Collected by Mr. H. Pittier, of the Bureau of Plant Industry. Received August 14, 1913.

"One of the peculiar bromeliaceous fruits common on the market at Caracas during the months from January to April is the *curujujúl*, said to proceed from the above-named species. It is a slender pod, in shape somewhat like a very young banana finger and of a pale greenish yellow color. Its thin skin contains a translucent fluid of sirupy consistency and very sweet in which are embedded the numerous black seeds. The *curujujúl* is very much relished on account of its refreshing qualities and its delicate perfume, being either sucked offhand or served in the form of sherbet. It is also used in the preparation of a fine preserve. This plant grows wild in the lower belt of Venezuela; it is also planted at times in hedges. As it is, the fruit is a valuable addition to the Venezuelan fruit market, and it could very likely be improved by cultivation. The same plant is reported from Colombia, Central America, and Mexico. I had previously partaken of the fruits in Nicoya, Costa Rica, where the plant is known as *piñuela de garrobo* and in Chepo, Panama, where it is called *piro*, but the fruits were much smaller and of a very inferior quality. These may have belonged to distinct species. The fruits of the Mexican *piñuela* as sold cooked on the market at Tehuantepec are smaller, according to a natural-size picture taken by Messrs. G. N. Collins and C. B. Doyle (No. 9513)." (*Pittier.*)

36261. LILIUM LONGIFLORUM Thunberg. **Harris's lily.**

From Philadelphia, Pa. Presented by Mr. William K. Harris. Received October 3, 1913.

"Var. *eximium*. Bulbs raised from the original stock of the well-known *harrisii* Easter lily. To be grown to produce seed for the experimental work of Bureau officials." (*Bisset.*)

Bulbs.

36262. CARICA PAPAYA L. **Papaya.**

From Buenos Aires, Argentina. Presented by Mr. H. M. Curran. Received September 29, 1913.

36263. PISTACIA spp. **Pistache.**

From Fresno, Cal. Collected at Roeding Park, September 25, 1913, by Mr. J. E. Morrow, for propagation at the Plant Introduction Field Station, Chico, Cal.

Seeds from trees numbered 1 to 24. To be grown for stocks only.

Trees 1 to 24 proved to be a mixture of species of Pistacia, probably including *P. mutica*, *P. vera*, and *P. terebinthus*, all of these species having been sent to Roeding Park.

36264. SCHINOPSIS LORENTZII (Griseb.) Engler. **Quebracho.**

From Buenos Aires, Argentina. Presented by Dr. Carlos Thays, Director of the Botanic Garden. Received October 2, 1913.

See S. P. I. No. 34016 for previous introduction.

For a full discussion of the economic value of this anacardiaceous tree, see "Quebracho wood and its substitutes," by Clayton D. Mell and Warren D. Brush, Forest Service Circular 202, 1912.

36265 and 36266. CITRUS SINENSIS (L.) Osbeck. **Orange.**

From Guatemala. Presented by Mr. S. Billow, Guatemala City. Received October 2, 1913.

36265. "An orange slightly acid in taste; very juicy; 23 cm. in circumference with a rind 3 mm. in thickness; 4 or 5 will weigh a pound. Grown at Escuintla, 1,111 feet above sea level. The average annual rainfall is 125 inches; temperature from 60° to 95° F." (*Billow.*)

Seeds.

36266. "An orange very sweet and juicy; 26 cm. in circumference with a rind 4 mm. in thickness; 4 or 5 will weigh a pound. Grown at Moran, 3,959 feet above sea level. The average annual rainfall is 60 inches; temperature 60° to 90° F." (*Billow.*)

Seeds.

36267 to 36269. ZEA MAYS L. **Corn.**

From Cuzco, Peru. Presented by Mr. F. A. Peralta, at the request of Mr. W. F. Wight, of the Bureau of Plant Industry. Received August 5, 1913.

Quoted notes by Mr. W. W. Tracy, who tested the varieties.

36267. "But five plants germinated, all but one of which died without coming into tassel, that one not maturing fruit. The plant was notably deep rooted."

36268. "Six plants germinated, all smaller and weaker than the preceding; no plants tasseled. They were very deep rooted, with a narrow, hard leaf. These two might develop into strains adapted to dry lands and high temperatures. They seem to suffer from cold and wet."

36269. (No report.)

36270. PERSEA AMERICANA Miller. **Avocado.**
(*P. gratissima* Gaertn.)

From Miami, Fla. From seedlings sent from Washington to the Plant Introduction Field Station, Miami, Fla., and grown there under Garden No. 1247. Received September 10, 1913.

"Oblong oval, slightly oblique in shape; medium large, 5 inches long, 3⅞ inches wide; weight 24 ounces; surface fairly smooth; yellowish green, almost yellow at base, numerous large yellow dots; meat deep yellow, light green near the skin, three-

fourths to 1 inch thick, of melting, buttery texture and rich, nutty flavor; quality good to very good; seeds medium small, oblate, flattened on sides, and slightly rough on the surface." (*Wilson Popenoe.*)

36271. SOLANUM ACULEATISSIMUM Jacquin.

From Caravellas, Brazil. Presented by Mr. Fred Birch. Received October 9, 1913.

"Seeds of the sweet hollow tomato; plant 18 inches to 2 feet high, forming a branched bush exceedingly spiny; leaf about the size of a medium maple leaf but shaped like those of the ordinary tomato; skin of fruit tough, scarlet in color; flesh about three-sixteenths to one-fourth inch thick, white, granular, soft, and sweet; the seeds grow in a loose, dry cluster in the center. Plants grown in the richest soil are less spiny than those growing on the dry hillside." (*Birch.*)

Under the name *arrebenta-cavallos*, M. Pio Corrêa describes this plant as being "used for cutaneous affections and in mesenteric tuberculosis." He says that it is poisonous.

36272. EUGENIA VENTENATII Bentham.

Drooping myrtle.

From Victoria, Australia. Presented by Mr. J. Cronin, curator, Melbourne Botanic Garden. Received October 8, 1913.

"Drooping myrtle, or large-leaved water gum; 40 to 60 feet in height, 24 to 36 inches in diameter. Wood of a gray or pinkish hue and beautifully marked. It is close grained, hard, heavy, and tough; it is used for tool handles, poles of drays, ribs of boats, and the flooring boards of verandas." (*J. H. Maiden, Useful Native Plants of Australia.*)

Distribution.—This myrtaceous tree occurs in the valley of the Brisbane River in Queensland, the valley of the Clarence River in New South Wales, and along the coast of Moreton and Rockingham Bays in Queensland.

36273 to 36278.

From Minas Geraes, Brazil. Presented by Mr. Fred Birch. Received October 6, 1913.

36273. CARICA PAPAYA L. **Papaya.**

"*Karl Schultz.* One of the regular-shaped papayas; under the average size, about 6 inches long and 4 to 4½ inches in diameter. The rich orange-colored skin was the clearest and most nearly free from spots and wrinkles that I have ever seen; the flesh is extra thick and the seed cavity very small; seeds large. Extra good quality." (*Birch.*)

36274. ANNONA sp.

"Seeds of the *Jaca-andu*, the 'wild dog's jack fruit' or wild forest soursop of Minas Geraes. Fruit the size of an orange; very aromatic and delicious when partaken of very sparingly." (*Birch.*)

36275 to 36278. CARICA PAPAYA L. **Papaya.**

36275. "Seeds of the best long-stemmed papaya [*i. e.*, from staminate trees]; sweet and richly flavored; bears great quantities of sweet-scented jasminelike flowers on long stems, which are very attractive to humming birds and insects. As the young fruit grows its weight makes the long stem drop gradually to the trunk of the tree, where it forms one of the dangling clusters which surround and hide the trunk. Sometimes such a cluster will consist of from 15 to 25 pear-shaped fruits, weighing from 1 to 2 pounds each. They take a long time to grow and ripen. Most of this sort are inferior in taste." (*Birch.*)

36273 to 36278—Continued.

36276. "Seeds of a large, globular papaya, with firm, sweet flesh. One of the best tasting papayas and of very good keeping and shipping qualities." (*Birch.*)

36277. "Seeds from our *Watergate* papaya, of very delicate, rich flavor. The first ripe fruit was picked within 12 months of the setting out of the seedling tree, and within 18 months from that time we had over 200 fruits from it." (*Birch.*)

36278. "Seeds of a pear-shaped fruit weighing over 4 pounds each, about 12 inches long and 6 inches in diameter and of fine rich flavor. They would be worth growing in Florida or California. I have heard that colonists in Minas Geraes got them from Rio Grande do Sul." (*Birch.*)

36279. PEUMUS BOLDUS Molina. **Boldo.**

From southern Chile. Collected by Mr. W. F. Wight, of the Bureau of Plant Industry. Received May 7, 1913.

"(No. 47.) A shrub or small tree belonging to the Monimiaceæ, with dark-green, very aromatic foliage and abundant white, fragrant flowers. The fruit, although sweet and agreeable, has little flesh. It is considerably prized in southern Chile." (*Wight.*)

"The boldo has opposite short-stalked ovate leaves, which are entire and rough on the surface. The flowers are in little axillary racemes, the males and females on different plants. The center of the male flower is occupied by a great many stamens and that of the female by from two to nine ovaries, which when ripe are succulent drupes, about the size of haws and very aromatic, as are all the parts of the plant. The bark is serviceable to tanners, and the wood is preferred before any other in the country for making charcoal, while the fruits are eaten." (*A. A. Black, in Lindley's Treasury of Botany.*)

36280 and 36281. CARICA PAPAYA L. **Papaya.**

From Colombo, Ceylon. Presented by Mr. Charles K. Moser, American consul. Received October 7, 1913.

Notes, through Mr. Moser, from an interview with Mr. H. F. Macmillan, curator, Royal Botanic Gardens, Peradeniya, Ceylon.

"Mr. Macmillan said that *Carica papaya* was introduced into Ceylon from the West Indies before 1678. *Carica candamarcensis* was a native of Ecuador and was introduced into Ceylon about 1880. It is being grown with some difficulty in the Hakgala Gardens, near Newara Eliya, and through the operation of birds it has been scattered among remote, inaccessible places through the mountains, where it is growing wild. It will not grow lower than 3,000 feet, and while its fruits are edible when stewed, little use is made of them. The papaya in general cultivation in Ceylon is the ordinary West Indian variety without any changes in form or nature. There is no Singhalese variety or any other papaya indigenous to Ceylon. So far as he knows *Carica papaya* and *Carica candamarcensis* have never been crossed. There is no 'Ceylon hybrid papaya' and no hybrid papaya of any sort. The distinctions noted by Dr. Huybertsz (that the 'Ceylon hybrid papaya' is not a cross between *Carica candamarcensis*, or mountain pawpaw, and *Carica papaya*, but a product of natural cross-fertilization between the *Carica papaya* introduced into the island from the West Indies about 1678 and a variety of the same species which he thinks indigenous to Ceylon and which he calls *Sinhala papaya*) are imaginary.

"If the flavor and papain of the papaya produced in Ceylon are superior to those produced in the West Indies or elsewhere, it is probably due to climatic or soil con-

ditions. A monœcious form, in which the trees of both sexes bear fruit, is not very general, but is often found. The same tree is quite likely to produce long or round fruit, one form weak in papain and one strong.

"According to a resident of Kegalle, the trade in papain has been carried on in that district for more than 30 years and it is chiefly in the hands of Chetties and coast Moors at the present time. Owing to religious objections, it is very difficult to get a photograph of these people and their connection with the papain industry. This resident says that a large business is at present carried on in artificial papain, which is prepared from rice flour or starch. A pound of artificial papain costs only about 14 cents gold to produce but is sold in Colombo at from 98 cents to $1.25 per pound. It is asserted that a large number of parcels of this adulterated or artificial papain are being shipped to London. These facts, however, can not be verified by this office."

36280. Ordinary Ceylonese papaya.

36281. "This is a selection of *Carica papaya*, the juice of which is rich in papain." (*Moser.*)

36282. PANAX QUINQUEFOLIUM L. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From Songdo, Chosen (Korea). Presented by Mr. N. Gist Gee, Soochow University, Soochow, China. Received October 14, 1913.

"The soil is prepared by mixing sand and loam in the proportion of one to one. The sand is frequently obtained by sifting it from the bed of a near-by stream. In order to get as near as possible to the natural wild environments of the plant, the leaves of the oak or chestnut tree are collected, allowed to decay, and then dried. When dry, this material is crumbled very fine and then mixed, half and half, with sand sifted from the hillside. This is obtained by first removing the top layer and getting the unexposed earth. The plants are cultivated on elevated beds about 6 or 8 inches above the pathways between them. These beds are usually just about wide enough for one to work them from one side (about 2 or 2½ feet). The length of the bed varies with the kind of field; short on hillsides, quite long in the valleys. Fertilizer 1 inch thick is spread upon the beds before the seeds are planted. The beds are covered over with sheds (ordinary sheds with curtains which can be rolled up or down, closing them in front). They seem to keep the plants sheltered throughout their entire period of growth and regulate the amount of sunlight by the curtains. Before planting, soak the seeds in water for four days until they swell and are nearly ready to burst. Then take them out and dry them. This should be done before fall. Then in the fall bury a vessel in the earth in a shady place and place the seeds, as already prepared, in it, leaving it uncovered. Allow them to freeze, leaving them in the vessel until the spring. Drive nails with heads as large as the ginseng seeds in a plank, making them about 1 inch apart. Use this to plant the seeds regularly about five-eighths of an inch deep. Place a seed in each hole and cover lightly with the hand. The rows should be about 6 inches apart. Spray with a very fine stream of water twice a day. Allow the planted seeds to receive the sunlight until the sprouts appear. During all of this time the beds should be protected from rains, but sprayed regularly twice a day. The soil should be kept in good condition by hand cultivation after the young plants come up. This care must be constantly given to the plants. The plants are taken up at the time they are about 1 year old and only the best ones are saved for transplanting. Many planters do this each year for six years after the plant comes up. Others transplant and select for only the first two or three years. The plants are planted out about 6 inches apart and in rows about 1 foot apart. Care must be taken to give the two regular waterings each day during the growing seasons." (*Gee.*)

36283 to 36484.

Collected by Mr. W. F. Wight, of the Bureau of Plant Industry. Received July 7, 1913.

Quoted notes by Mr. Wight, except as otherwise indicated.

36283. ABRUS PRAECATORIUS L. **Jequirity.**

"(No. 310. Arequipa, Peru.) *Guarero.* Seeds obtained from an Indian medicine woman, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida and California."

36284 and 36285. AGROSTIS spp.

"From Tiahuanaco, Bolivia. Grass from the plateau near Tiahuanaco. It forms tufts and is rather wiry when old. It is doubtful whether even the llama will eat it except when it is young. The native grasses of this region appear to have little value, but they may be of botanical interest."

36284. "(No. 681.)" **36285.** "(No. 683.)"

36286. ALLIUM CEPA L. **Onion.**

"(No. 292.) Seeds obtained from an Indian woman in Arequipa, Peru. There seems to be practically no seed trade, as a business, in Peru, and these seeds may show some interesting variations."

36287. AMARANTHUS sp.

"(No. 595.) Seeds obtained from an Indian medicine woman in Oruro, Bolivia."

36288 to 36293. ANNONA CHERIMOLA Miller. **Cherimoya.**

36288. "(No. 341. Cuzco, Peru.) This fruit is very abundant in the market at Cuzco and of excellent quality. Probably none are grown within one or two days' journey from the city, and they are often brought from valleys at four or five days' distance."

36289. "(No. 591. Oruro, Bolivia.) Some of the very finest cherimoyas seen in South America were in the market at Oruro. They came from the vicinity of Cochabamba."

36290. "(No. 650. From Peru.) A cherimoya with surface slightly roughened."

36291. "(No. 651.) Rough surface, the usual type in Peru, but still of excellent quality."

36292. "(No. 649. Peru.) This fruit had a practically smooth surface and by many is considered superior to those with the rough surface."

36293. "(No. 660. Arequipa, Peru.) An excellent specimen."

36294. ANNONA MURICATA L. **Soursop.**

"(No. 652. Lima, Peru.) *Guanábana* or *custard-apple.* This is usually a larger fruit than the cherimoya and of softer texture. Quite common in the market at Lima and perhaps at other places in some seasons."

36295. APIUM sp.

"(No. 293. Arequipa, Peru.) Seeds obtained from an Indian woman in Arequipa."

See S. P. I. No. 36286 for further note.

36283 to 36484—Continued.

36296 to 36298. ARACHIS HYPOGAEA L. **Peanut.**

36296. "(No. 330. Cuzco, Peru.) *Manin.* Peanuts sold by Indian women on the market at Cuzco."

36297. "(No. 311. Arequipa, Peru.) *Manin.* Peanuts sold by Indian women in the market."

36298. "(No. 339. Cuzco, Peru.)"

36299. BRASSICA OLERACEA CAPITATA L. **Cabbage.**

"(No. 288. Arequipa, Peru.) *Repallo.* Seeds obtained from an Indian woman in Arequipa.

See No. 36286 for further note.

36300. BRASSICA OLERACEA CAPITATA L. **Cabbage.**

"(No. 289. Arequipa, Peru.) *Repallo blanco.* Seeds obtained from an Indian woman in Arequipa."

See S. P. I. No. 36286 for further note.

36301. BRASSICA RAPA L. **Turnip.**

"(No. 290. Arequipa, Peru.) *Navo.* Seeds obtained from an Indian woman in Arequipa. Grown by the Indians. May show some interesting variations."

36302. BRASSICA OLERACEA CAPITATA L. **Cabbage.**

"(No. 291. Arequipa, Peru.) Seeds obtained from an Indian woman in Arequipa. Grown by the Indians. May show some very interesting variations."

36303. CAESALPINIA sp.

"(No. 312. Arequipa, Peru.) Seeds of a large tree obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida or California."

36304. CHENOPODIUM sp.

"(No. 295. Peru.) *Cañegua.* A species of Chenopodium said to be cultivated in the Puno district in the same way as quinoa, although what I supposed to be this is a smaller plant and more spreading in habit. It is probably less valuable than quinoa and certainly not grown to the same extent."

36305 to 36312. CHENOPODIUM QUINOA Willd. **Quinoa.**

"One of the plants cultivated by the native inhabitants of the highlands of Peru and Bolivia is a species of Chenopodium (*C. quinoa*) and so far as foliage is concerned not very unlike in general appearance our ordinary goosefoot. Its seeds, however, are white or nearly so and fully three times as large as those of *C. album.* In pre-Columbian times this plant was one of the main foods of the Indians, evidently ranking with the potato and corn in this respect. None of the Old World cereals being known before the discovery, it was only natural that the cultivation of this plant should have extended over a considerable area. In addition to Peru and Bolivia it was probably grown in some parts of Argentina and is known with certainty to have been cultivated in Chile; in fact, there even appears to have been an Araucanian or Mapuche name for it. Doubtless its cultivation at the present time is less extensive than formerly, due in part to the diminished Indian population and in part to an apparent ignorance or indifference on the part of the white population to its real merits as a food. At present it is probably most commonly grown on the Titicaca

36283 to 36484—Continued.

plateau. It is said to yield abundantly, though it does not seem to have occurred to any one to measure the yield of a given area. In late April and May some of the fields were red with compact panicles, for this seemed the only part of the plant visible for a short distance. Other fields had a greenish cast, there being two or probably more varieties. On the island of Chiloe, southern Chile, the plant grows much taller than any seen about Lake Titicaca and the foliage was also much more abundant, though whether the latter condition was due to the difference in the season or to the lower altitude and more abundant rainfall is uncertain. The grain is used by the Indians in the same manner as rice, being put in soups and made into porridge. It appeals to a North American primarily as a breakfast food and should rank with oatmeal and some of the better wheat preparations. It may be cooked and served in a manner similar to oatmeal, but to spread it out in a tray about an inch deep after steaming and then brown it in the oven makes it even more appetizing."

36305. "(No. 294. Peru.)"

36306. "(No. 355. La Paz, Bolivia.) *Cañahue.* This may be another species of Chenopodium grown by the Indians, or possibly the wild form of *C. quinoa.* What I supposed was this plant has a different habit from *C. quinoa*, however."

36307. "(No. 371. Peru.) The well-known quinoa, of which there are two and possibly three varieties."

36308. "(No. 619. Peru.)"

36309. "(No. 631. Cuzco, Peru.) White quinoa from near Cuzco."

36310. "(No. 643. Oraya, Peru.)"

36311. "(No. 644. Lima, Peru.) Quinoa from Lima."

36312. "(No. 648. Lima, Peru.)"

36313. CORIANDRUM SATIVUM L. **Coriander.**

"(No. 313. Peru.)"

36314 and 36315. CUCUMIS MELO L. **Muskmelon.**

36314. "(No. 306. Peru.)"

36315. "(No. 307. Peru.)"

36316 to 36323. CUCURBITA spp. **Squash.**

36316. "(No. 331. Cuzco, Peru.) There is a great variety of squashes in Peru and Bolivia, and they have evidently been cultivated for many centuries. Some of the vases taken from graves said by archeologists to be very old have evidently been modeled from different types of squashes."

36317. "(No. 340. Cuzco, Peru.)"

36318. "(No. 345. Cuzco, Peru.)"

36319. "(No. 348. Oruro, Bolivia.)"

36320. "(No. 349. Oruro, Bolivia.)"

36321. "(No. 363. Oruro, Bolivia.)"

36322. "(No. 369. Cuzco, Peru.)"

36323. "(No. 372. Oruro, Bolivia.)"

36324. LUCUMA sp.

"(No. 582. Cuzco, Peru.) These fruits were smaller and not so good in quality as those from Arequipa. Whether this is due to their being brought

36283 to 36484—Continued.

in before being fully mature or because of the higher altitude, it is impossible to say. They should be able to endure more cold than seeds from a lower altitude."

36325 to 36342. CUCURBITA spp.

36325 to 36327. CUCURBITA spp. **Squash.**

36325. "(No. 397. Cuzco, Peru.)"

36326. "(No. 586. Cuzco, Peru.)"

36327. "(No. 589. Cuzco, Peru.)"

36328. CUCURBITA FICIFOLIA Bouche.

"(No. 375. Cuzco, Peru.) *Lacayoti.* This vegetable has a rind resembling the watermelon in appearance, but with a thick stem like that of a squash. It is gathered before being completely matured and used with other vegetables and meats in the preparation of a kind of soup."

36329. CUCURBITA MAXIMA Duch. **Squash.**

"(No. 665. Lima, Peru.) Squash, pronounced excellent in quality by the American family to whom I took it to be tested."

36330 to 36341. CUCURBITA PEPO L.

"Most of them pronounced excellent by the American family to which I took them to be tested."

36330. CUCURBITA spp. **Pumpkin.**

"(No. 381. Oruro, Bolivia.) The only pumpkin seen either in Bolivia or Peru. Rather small, but of good quality."

36331. "(No. 654. Lima, Peru.)" **Squash.**

36332. "(No. 655. Lima, Peru.)" **Squash.**

36333. "(No. 656. Lima, Peru.) Large. Excellent in quality." **Squash.**

36334. "(No. 657. Lima, Peru.)" **Squash.**

36335. "(No. 659. Lima, Peru.) Middle-sized squash." **Squash.**

36336. "(No. 661. Lima, Peru.)" **Squash.**

36337. "(No. 662. Lima, Peru.)"

36338. "(No. 663. Lima, Peru.)" **Squash.**

36339. "(No. 664. Lima, Peru.)" **Squash.**

36340. "(No. 666. Lima, Peru.)" **Squash.**

36341. "(No. 667. Lima, Peru.)" **Squash.**

36342. CUCURBITA sp. **Squash.**

"(No. 669. Arequipa, Peru.) Squash from the market in Arequipa."

36343. CYPHOMANDRA sp. **Tree tomato.**

"(No. 346. Arequipa, Peru.) A fruit sold in the market at Arequipa. Not a true tomato, but called *Tomate chileno* by the Indians."

36344. EPHEDRA sp.

"(No. 364. Oruro, Bolivia.) A low-growing Ephedra on the mountains at Oruro. Probably of interest only in a botanical collection."

36345 and 36346. HORDEUM VULGARE L. **Barley.**

36345. "(No. 302. Arequipa, Peru.)"

36346. "(No. 303. Arequipa, Peru.)"

36283 to 36484—Continued.

36347 and 36348. LUPINUS spp.

36347. "(No. 287. Arequipa, Peru.) Seeds obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida or California."

36348. "(No. 334. Cuzco, Peru.) A tall-growing lupine with very large white seeds, found in a garden at Cuzco, but of unknown origin."

36349. NASSELLA sp. **Grass.**

"(No. 680. Bolivia.) From the plateau near Tiahuanaco. This grass forms tufts and is rather wiry when old. It is doubtful whether even the llama will eat it except when it is young. The native grasses of this region appear to have little value, but they may be of botanical interest."

36350 to 36357. OPUNTIA spp. **Prickly pear.**

36350. "(No. 343. Cuzco, Peru.) *Tuna.* A variety with reddish fruits. This fruit is greatly prized in Peru and Bolivia, and this was exceptionally good in quality."

36351. "(No. 351. Oruro, Bolivia.) A wild cactus at 13,500 feet elevation, near Oruro. The seeds are very red, and dye is sometimes made from them."

36352. "(No. 359. Arequipa, Peru.) *Tuna.* From the market at Arequipa."

36353. "(No. 379. La Paz, Bolivia.) *Tuna.* With green fruit."

36354. "(No. 374. Oruro, Bolivia.) A wild species from the mountain above Oruro, 13,500 feet altitude."

36355. "(No. 354. La Paz, Bolivia.) The fruit of this is bronze colored and excellent in quality."

36356. "(No. 366. Oruro, Bolivia.) Seeds of a wild cactus found on the mountain above Oruro, at about 13,500 feet altitude."

36357. "(No. 370. Cuzco, Peru.) A tuna with green fruit, of good quality, but not quite equal to those with reddish or bronze-colored fruits."

36358 and 36359. ORMOSIA spp.

36358. ORMOSIA MONOSPERMA (Swartz) Urban.

"(No. 309. Lima, Peru.) *Guarero de la montaña.* Seeds obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained. They probably came from a lower altitude, but even if from the mountain region they can be grown only in the most favored localities of Florida or California."

36359. "(No. 309a. Lima, Peru.)"

The ormosias are tropical timber trees, the red and black seeds of which are often used for necklaces.

36360. HORDEUM VULGARE L.

"(No. 335. Oruro, Bolivia.)" **Barley.**

36361. PASSIFLORA sp.

Passion fruit.

"(No. 352. Arequipa, Peru.) *Tumbas.* This is a fruit belonging to the Passifloraceæ and grown in the gardens of foreigners as well as by the Indians.

36283 to 36484—Continued.

The fruit is longer than that of *Passiflora ligularis*, being about 4 inches long and 1½ to 1¾ inches in diameter."

36362 and 36363. PASSIFLORA LIGULARIS Juss. **Passion fruit.**

36362. "(No. 588. Oruro, Bolivia.) This fruit is 2 or 3 inches in diameter and very agreeable in taste, being much prized by many foreigners as well as by the natives. It comes from some of the valleys a few days' journey from Oruro and at a lower altitude."

36363. "(No. 668. Lima, Peru.) Fruit of Passiflora, common in the market at Lima."

36364. PHYSALIS sp.

"(No. 47. Arequipa, Peru.) A very good Physalis, grown in a garden at Arequipa and used for making preserves."

36365. PIMPINELLA ANISUM L. **Anise.**

"(No. 305. Peru.) Anise seed grown by the Indians."

36366 to 36368. PIPTADENIA spp.

36366. "(No. 399. Oruro, Bolivia.)"

36367 and 36368. PIPTADENIA CEBIL Grisebach. **Cebil.**

36367. "(No. 329. Cuzco, Peru.) Seeds, probably of some tropical tree. Native name *Huilca*. Obtained from an Indian medicine woman at Cuzco."

36368. "(No. 380. Oruro, Bolivia.) Probably a tropical tree. Obtained from an Indian medicine woman."

36369 and 36370. PISUM SATIVUM L. **Pea.**

36369. "(No. 316. Peru.)"

36370. "(No. 620. Cuzco, Peru.) A variety of Pisum grown by the Indians near Cuzco."

36371. PRUNUS SALICIFOLIA H. B. K. **Black cherry.**

"(No. 593. Cuzco, Peru.) *Capoilles*. This Prunus grows wild about 25 miles from Cuzco and at a lower altitude, perhaps 8,000 or 9,000 feet, and is a native species. The fruit is about as large as an Early Richmond cherry. Mr. Payne, an English farmer beyond Cuzco, expects to try it as a stock for the sweet cherry and believes it will enable him to grow the latter fruit in that part of Peru."

36372 to 36374. PSIDIUM GUAJAVA L. **Guava.**

36372. "(No. 579. Arequipa, Peru.) A pear-shaped guava, 3½ to 4 inches long."

36373. "(No. 658. Arequipa, Peru.) A large pear-shaped guava from Arequipa."

36374. "(No. 581. Arequipa, Peru.) A large guava, about 3 inches long and slightly pear shaped. Brought to the Arequipa market by the Indians. These trees sometimes reach a height of 20 feet in Peru."

36375. RICINUS COMMUNIS L. **Castor bean.**

"(No. 314. Arequipa, Peru.) *Ygerilla*. Seeds obtained from an Indian medicine woman in Arequipa, from whom no reliable information could be obtained."

36283 to 36484—Continued.

36376. SAPINDUS SAPONARIA L. **Soapberry.**

"(No. 592. Oruro, Bolivia.)"

36377. RICINUS COMMUNIS L. **Castor bean.**

"(No. 315. Arequipa, Peru.) *Ygerilla.* Obtained from an Indian medicine woman at Arequipa, from whom no reliable information could be obtained."

36378. SAPINDUS SAPONARIA L. **Soapberry.**

"From Cuzco, Peru. Used in washing."

36379 to 36383. SOLANUM spp.

36379. "(No. 336. Sicuani, Peru.) Seeds of a wild species from near Sicuani."

36380. "(No. 362. Oruro, Bolivia.) A wild tuber-bearing species of Solanum, found on the mountain above Oruro at an elevation of about 13,000 feet. It evidently grows only 8 or 10 inches high in its dry, rocky habitat, and the tubers found were about one-half inch in diameter."

36381. "(No. 376. Quiquijana, Peru.) A wild species of Solanum. No tubers were found."

36382. "(No. 580. Arequipa, Peru.) A wild Solanum from Arequipa, of no value except for its botanical interest."

36383. "(No. 646. Oruro, Bolivia.) A wild Solanum from the mountain above Oruro at an elevation of 13,500 feet. It is not tuber bearing and is only of botanical interest."

36384. SOLANUM TUBEROSUM L. **Potato.**

"(No. 670. Arequipa, Peru.) Seeds from a field near Arequipa."

36385 and 36386. STIPA sp. **Grass.**

36385. "(No. 595a. Oruro, Bolivia.)"

36386. "(No. 682. Tiahuanaco, Bolivia.)"

36387. TOLUIFERA sp.

"(No. 395. Oruro, Bolivia). Seed, probably of a tropical tree, obtained from an Indian woman."

36388 to 36390. TRITICUM spp. **Wheat.**

36388. "(No. 304. Peru.)"

36389. "(No. 394. Oruro, Bolivia.)"

36390. "(No. 396. Oruro, Bolivia.)"

36391. TROPAEOLUM sp. **Nasturtium.**

"(No. 353. La Paz, Bolivia.) This nasturtium grew wild on the mountain side above La Paz and was seen in other localities. The petals are deeply laciniate."

36392. TRITICUM AESTIVUM L. (*T. vulgare* Vill.) **Wheat.**

"(No. 398. Oruro, Bolivia.)"

36393. VICIA FABA L. **Broad bean.**

"(No. 342. Cuzco, Peru.) *Avas.* A variety grown about 12 miles from Cuzco and said to be good."

36394. ORMOSIA sp.

"(No. 365. Cuzco, Peru.) Large red seeds, probably of a tropical tree, obtained from an Indian medicine woman in Cuzco."

36283 to 36484—Continued.

36395 to 36484. PHASEOLUS spp. **Bean.**

"The following numbers are varieties of beans collected by Mr. W. F. Wight in various places during his South American trip. As found in the markets these beans are very badly mixed, one of the packets containing more than 20 distinct varieties. These varieties have been sorted out of the various numbered packets secured by Mr. Wight and each variety given a separate number. The sorting of the varieties has been done by Dr. D. N. Shoemaker, who has also furnished the descriptions." (*Skeels.*)

36395 to 36475. PHASEOLUS VULGARIS L.

36395. "No. 1. (Arequipa, Peru. April 22, 1913.) White bean, similar in shape to *Pea* bean, but variable in size. Selected from Wight's No. 284."

36396. "No. 2. (Concepcion, Chile.) *Caballeros.* White, kidney shaped. Selected from Wight's No. 78."

36397. "No. 3. (Arequipa, Peru. April 22, 1913.) White, with very light-yellow eye; resembles white *P. coccineus* in texture of skin. Selected from Wight's No. 285."

36398. "No. 4. (Panguipulli, Chile.) White, like *Pea* bean, but longer. Selected from Wight's No. 145."

36399. "No. 5. (Arequipa, Peru. April 22, 1913.) White, kidney shaped, resembling white *P. coccineus* in texture of skin. Selected from Wight's No. 281."

36400. "No. 6. (From Peru.) White."

36401. "No. 7. (Arequipa, Peru. April 22, 1913.) White, kidney shaped, much like No. 5 (S. P. I. No. 36399). Selected from Wight's No. 283."

36402. "No. 8. (Concepcion, Chile. February 10, 1913.) Very light yellow; size, shape, and pattern that of *Horticultural Pole.* Selected from Wight's No. 52."

36403. "No. 9. (Oruro, Bolivia.) White, round. Selected from Wight's No. 337."

36404. "No. 10. Selected from Wight's Nos. 675, 676, 677, and 678, from Arequipa, Peru, and No. 51, *Bueye*, from Concepcion, Chile."

36405. "No. 11. (*Avalitos.* Concepcion, Chile.) Brownish terra cotta, speckled with light yellow, and with darker eye. Selected from Wight's No. 71."

36406. "No. 12. (*Chincha.* Dr. Aguilar, Cuzco, Peru.) Light stippled ground, with light-yellow markings. Not uniform in size. Selected from Wight's No. 671."

36407. "No. 13. (*Azufrados.* Concepcion, Chile.) Coppery-yellow self. Selected from Wight's No. 76."

36408. "No. 14. (Dr. Aguilar, Cuzco, Peru.) Reddish yellow self. Selected from Wight's No. 673."

36409. "No. 15. (*Del Norte.* Dr. Aguilar, Cuzco, Peru.) Dun color self. Selected from Wight's No. 672."

36410. "No. 16. (*Avalitos.* Concepcion, Chile.) Buff ground, with markings from yellow to black. Uniform in size, shape, and pattern. Selected from Wight's No. 71."

36283 to 36484—Continued.

36411. "No. 17. (*Burros.* Concepcion, Chile.) Dark fawn, about the size of *Medium* beans. Selected from Wight's No. 74."

36412. "No. 18. (Concepcion, Chile.) Light olive. Selected from Wight's No. 72."

36413. "No. 19. (Oruro, Bolivia.) Light yellow, with darker eye. Selected from Wight's No. 389."

36414. "No. 20. (*Borito.* Talcahuano, Chile.) Golden bronze green, almost round. Selected from Wight's No. 259."

36415. "No. 21. (*Manteco.* Concepcion, Chile.) Yellow self. Uniform in shape but not in size. Selected from Wight's No. 75."

36416. "No. 22. (Panguipulli, Chile.) Buff self, with slightly darker eye. Selected from Wight's No. 144."

36417. "No. 23. (Arequipa, Peru.) Copper-orange self, straight kidney shape. Selected from Wight's No. 281."

36418. "No. 24. (Arequipa, Peru.) White ground, with reddish blotches. Selected from Wight's No. 282."

36419. "No. 25. (Concepcion, Chile.) White ground, half covered with dun, which is mostly covered with maroon blotches. Long, slightly curved. Selected from Wight's No. 50."

36420. "No. 26. (Concepcion, Chile.) White on one half, other end buff with purple stripes. Selected from Wight's No. 51."

36421. "No. 27. (Concepcion, Chile.) White ground, buff markings, small. Selected from Wight's No. 51."

36422. "No. 28. (Arequipa, Peru.) Selected from Wight's Nos. 675, 677, and 678. Half white, other half yellow buff, marked with deep purple stripes; large, kidney shaped."

36423. "No. 29. (Arequipa, Peru.) Selected from Wight's Nos. 282, 675, 677, 678, and 679. Half white, half red, even-margined pattern, long."

36424. "No. 30. Selected from Wight's Nos. 675, 676, 677, 678, 679, from Arequipa, Peru, and 357, from Oruro, Bolivia. White ground, mottled with reddish brown; large, flat."

36425. "No. 31. (Oruro, Bolivia.) Selected from Wight's Nos. 337, 344, 350, and 389. White ground, blotched with black and purple-brown; globular shape."

36426. "No. 32. (Oruro, Bolivia.) White ground with round red spots; flat. Selected from Wight's No. 350."

36427. "No. 33. (Oruro, Bolivia.) White stippled ground, with dark purple around eye, and splashed over half the bean. Selected from Wight's No. 337."

36428. "No. 34. (Oruro, Bolivia.) Yellowish stipple in smooth-margined pattern, overlaid with purplish stripe; long. Selected from Wight's No. 389."

36429. "No. 35. (Cuzco, Peru.) Selected from Wight's Nos. 357, 358, 373, and 377. White ground, spotted with dark reddish brown; flat, large."

36430. "No. 36. (Cuzco, Peru.) Selected from Wight's Nos. 357 and 361. White ground, spotted with black; large, long."

36431. "No. 37. (Cuzco, Peru.) Selected from Wight's Nos. 373, 377, and 383. Yellowish purple ground, striped with dark purple."

36283 to 36484—Continued.

36432. "No. 38. Selected from Wight's Nos. 358, 377, and 383, from Cuzco, Peru, and No. 344, from Oruro, Bolivia. White ground with brown blotches overlaid with purple stripes; globular."

36433. "No. 39. Selected from Wight's Nos. 337 and 350, from Oruro, Bolivia, No. 373, from Cuzco, Peru, and No. 677, from Arequipa, Peru. White ground blotched with reddish brown; flattened globular."

36434. "No. 40. (Oruro, Bolivia.) Selected from Wight's Nos. 337, 350, and 389. Covered with purple splashes; round."

36435. "No. 41. (Oruro, Bolivia.) Selected from Wight's Nos. 337 and 344. Yellowish purple ground, striped with dark purple and black; round."

36436. "No. 42. (Oruro, Bolivia.) Yellowish ground, almost covered by purple to black blotches and stripes; round. Selected from Wight's No. 337."

36437. "No. 43. Selected from Wight's No. 337, from Oruro, Bolivia, and No. 358, from Cuzco, Peru. Yellowish buff; small, round."

36438. "No. 44. (Oruro, Bolivia.) Selected from Wight's Nos. 337 and 389. Dark brown; small, round."

36439. "No. 45. Selected from Wight's Nos. 350 and 389, from Oruro, Bolivia, and Nos. 358 and 383, from Cuzco, Peru. Dark purple to black; small, round."

36440. "No. 46. Selected from Wight's Nos. 350 and 389, from Oruro, Bolivia, and Nos. 338, 358, 373, 377, and 383, from Cuzco, Peru. Maroon; small, globular."

36441. "No. 47. Selected from Wight's Nos. 338, 358, 373, 377, and 382, from Cuzco, Peru, and Nos. 337, 358, and 389, from Oruro, Bolivia. Dun colored, striped darker; small, round."

36442. "No. 48. Selected from Wight's Nos. 337 and 389, from Oruro, Bolivia, and Nos. 338, 358, 373, 377, and 383, from Cuzco, Peru. Dun colored with purple blotches; small, round."

36443. "No. 49. Selected from Wight's Nos. 282, 675, 676, 678, and 679, from Arequipa, Peru, and No. 389, from Oruro, Bolivia. Dun ground, finely stenciled and broadly striped with dark purple; large, straight."

36444. "No. 50. Selected from Wight's Nos. 337 and 350, from Oruro, Bolivia, and No. 282, from Arequipa, Peru. Dun ground, black striped; long."

36445. "No. 51. Selected from Wight's Nos. 675, 676, 677, 678, and 679, from Arequipa, Peru. Dun ground, dark purple stripes and blotches; long, square ended."

36446. "No. 52. (Oruro, Bolivia.) Maroon, with broad white micropylar stripe; round. Selected from Wight's No. 337."

36447. "No. 53. (Cuzco, Peru.) Selected from Wight's Nos. 358 and 383. Dun, with white micropylar stripes; small, round."

36448. "No. 54. (Oruro, Bolivia.) Dun, with purple stripes and broad white micropylar stripes. Selected from Wight's No. 337."

36449. "No. 55. (Oruro, Bolivia.) Selected from Wight's Nos. 337, 350, and 389. Drab with broad white micropylar stripe; large, straight, flat."

36283 to 36484—Continued.

36450. "No. 56. Selected from Wight's No. 383, from Cuzco, Peru, and No. 389, from Oruro, Bolivia. Dark drab with broad light micropylar stripe; small, long."

36451. "No. 57. Selected from Wight's Nos. 282, 675, 676, 677, and 678, from Arequipa, Peru, and Nos. 337 and 389, from Oruro, Bolivia. Bluish purple with light-dun micropylar stripe."

36452. "No. 58. Selected from Wight's Nos. 282, 675, 676, and 678, from Arequipa, Peru, and Nos. 350 and 387, from Oruro, Bolivia. Purple-brown with broad micropylar stripe; large, long, flat, broad."

36453. "No. 59. Selected from Wight's No. 146, from Panguipulli, Chile, and from No. 389, from Oruro, Bolivia. Dun self, slightly darker eye; long, straight."

36454. "No. 60. (Panguipulli, Chile.) Purple-garnet self; long, straight, square end. Selected from Wight's No. 142."

36455. "No. 61. (Panguipulli, Chile.) Dun self, with darker eye; long, square end. Selected from Wight's No. 143."

36456. "No. 62. (Arequipa, Peru.) Dun, mottled with dark purple; very large, flat. Selected from Wight's No. 579."

36457. "No. 63. (*Araucanos*. Concepcion, Chile.) Much like *Horticultural Pole*. Selected from Wight's No. 77."

36458. "No. 64. Selected from Wight's No. 350, from Oruro, Bolivia, and No. 383, from Cuzco, Peru. White, with black stripe from hilum to to micropylar end."

36459. "No. 65. Selected from Wight's Nos. 675 and 677, from Arequipa, Peru. White, with brown stripe lengthwise of the hilum; large, kidney shaped."

36460. "No. 66. (Arequipa, Peru.) White, purple blotch at hilum, and light-dun stripe on micropylar end, black eye; large, round, square ends."

36461. "No. 67. Selected from Wight's Nos. 677 and 678, from Arequipa, Peru, and Nos. 373 and 377, from Cuzco, Peru. Dun, with dark blotches; large."

36462. "No. 68. Selected from Wight's Nos. 675, 677, and 679 from Arequipa, Peru, and Nos. 358 and 383, from Cuzco, Peru. Dun, with purplish markings; large."

36463. "No. 69. Selected from Wight's No. 678, from Arequipa, Peru, and Nos. 350 and 389, from Oruro, Bolivia. Dun, striped purple; fairly large."

36464. "No. 70. (Oruro, Bolivia.) Reddish chrome, size and pattern like *Kentucky Cutshorts*. Selected from Wight's No. 344."

36465. "No. 71. (Concepcion, Chile.) Selected from Wight's Nos. 51 and 73. *Aliados*. Light dun, splashed olive; straight, round ends."

36466. "No. 72. Selected from Wight's No. 73, from Concepcion, Chile, and No. 338, from Cuzco, Peru. Light, with reddish markings; small."

36467. "No. 73. Selected from Wight's Nos. 675 and 677, from Arequipa, Peru, and Nos. 337, 344, and 350, from Oruro, Bolivia. Dark purple, almost self; long."

36468. "No. 74. Selected from Wight's Nos. 387 and 389, from Oruro, Bolivia, and No. 377, from Cuzco, Peru."

36283 to 36484—Continued.

36469. "No. 75. Selected from Wight's No. 677, from Arequipa, Peru, and Nos. 337, 344, and 389, from Oruro, Bolivia. Dun; large."

36470. "No. 76. Selected from Wight's Nos. 337 and 389, from Oruro, Bolivia, No. 357, from Cuzco, Peru, and Nos. 51 and 73, from Concepcion, Chile. Yellow or white, finely mottled; roundish."

36471. "No. 86. Mixed, oval, a little larger than *Medium* beans; colors various, dark."

36472. "No. 87. Flat, short, light colored, about the size of *Medium* beans; mixed."

36473. "No. 88. Globular, a little smaller than *Marrows*, colors various, dark."

36474. "No. 89. Mixed. Dark-red self; short, rather flat; a little larger than *Medium* beans."

36475. "No. 90. Large, yellow ground, mottled; straight, square ends; mixed."

36476 to 36478. PHASEOLUS COCCINEUS L. **Bean.**

36476. "No. 77. (Oruro, Bolivia.) White form of *Scarlet Runner*. Selected from Wight's No. 386."

36477. "No. 78. (Oruro, Bolivia.) *White Runner*. Selected from Wight's 388."

36478. "No. 79. (La Paz, Bolivia.) *White Runner*. Selected from Wight's No. 356."

36479 to 36484. PHASEOLUS LUNATUS L. **Lima bean.**

36479. "No. 80. (Ica, Peru.) White; a thick form of ordinary flat large Lima, very large."

36480. "No. 81. (Oruro, Bolivia.) White; a very large flat Lima. Selected from Wight's No. 388."

36481. "No. 82. (Arequipa, Peru.) White; large flat Lima. Selected from Wight's No. 286."

36482. "No. 83. (La Paz, Bolivia.) Almost white, stippled; flat, of peculiar kidney shape. Selected from Wight's No. 356."

36483. "No. 84. (Oruro, Bolivia.) White, almost covered with black; kidney shaped, larger at one end. Selected from Wight's No. 385."

36484. "No. 85. (La Paz, Bolivia.) White, almost covered with red; kidney shaped, larger at one end."

36485. AMYGDALUS PERSICA L. **Peach.**

(*Prunus persica* Stokes.)

From Kurram Valley, Northwest Frontier Province, India. Presented by Mr. Henry D. Baker, American consul, who secured them from Maj. G. J. Davis, commandant, Kurram Militia, Parachinar, Kurram Valley. Received October 11, 1913.

"The *Shalil* grows like a peach, which it much resembles, and has about the same blossom. The flesh is yellow and sweet, but it is not so juicy as that of a peach. Major Davis considers that it would be a particularly valuable fruit for cooking or canning, as the flesh, being harder than that of a peach, would probably not break so easily and could be more easily manipulated for such purposes. It grows at about 5,600 feet elevation. The only reference I can find to the *Shalil* in any book I have on India

is in the Imperial Gazetteer of the Northwest Province, wherein it states as regards the Kurram Valley: 'The climate varies. In winter even Lower Kurram is very cold and a bitter wind prevails, while in the summer it is hot and dry. Upper Kurram is never unpleasantly hot, even in summer, while in winter snow covers the ground for weeks. Wherever water is available for irrigation the soil is highly productive, but owing to the absence of a settled government and the internal feuds of the people, the cultivable area is not all under cultivation, and irrigation is carried on only by small channels constructed and maintained by a single hamlet or family. Apples, pears, grapes, cherries, pomegranates, peaches, and a fruit peculiar to the Kurram and Tirah known as *Shalil* also grows, and with improved communications fruit growing will probably become an important industry. Famine is unknown in Kurram.'" (*Baker.*)

36486. PHOENICOPHORIUM BORSIGIANUM (Koch) Stuntz. **Palm.**
(*Stevensonia grandifolia* Duncan.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanical Station. Received October 10,1913.

"This noble palm, famous for its beauty, is one of a group of five confined exclusively to the Seychelles Islands and each representing a single species. The tree in its mature state is wholly destitute of spines, whereas in the young state the deep orange-red petioles are clothed with black needlelike spines 1 to 3 inches long, and the young leaves are orange beneath and mottled with orange-brown spots above. The difference between the young and mature plants is so great that a person unfamiliar with the palm would consider them as belonging to different species. The flower spike is from 3 to 6 feet in length, divided into numerous slender branches swollen at the base and densely covered above with yellow flowers, each about a quarter of an inch in diameter. The flowers are monœcious." (*Gardeners' Chronicle, February 18, 1893, p. 201.*)

36487. NEPHROSPERMA VAN-HOUTTEANA (Wendl.) Balf. f. **Palm.**

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanical Station. Received October 10, 1913.

36488. PUNICA GRANATUM L. **Pomegranate.**

From German East Africa. Presented by the Usumbwa Company, Nyembe-Bulungwa, Post Tabora. Received October 22, 1913.

Cuttings.

36489 to 36491.

From Tutuila, American Samoa. Presented by Commander C. D. Stearns, governor. Received October 14, 1913.

36489. CARICA PAPAYA L.
36490. COLUBRINA ASIATICA Brongn. **36491.** IPOMOEA sp. **Papaya.**

36492 to 36496. NICOTIANA TABACUM L. **Tobacco.**

From Klaten, Java. Presented by the director of the Tobacco Experiment Station, Klaten, at the request of the director, Department of Agriculture, Buitenzorg, Java. Received October 15, 1913.

Cigar-wrapper types grown under the following names:

36492. "No. 1. *Kanari.*"
36493. "No. 2. Y."
36494. "No. 3. E."
36495. "No. 4. *Wonosobo.*"
36496. "No. 5. *Kedoe.*"

36497. GARCINIA OBLONGIFOLIA Champion.

From Hongkong, China. Presented by Mr. William J. Tutcher, Botanical and Forestry Department. Received October 22, 1913.

"A tree with leaves shortly stalked, oblong, narrowed at the base, 2½ to 3 inches long, the upper ones almost sessile. The yellow flowers produced in May are terminal and unisexual, the males three to seven together and shortly pedunculate. Sepals 2 lines, petals nearly 5 lines long. Stamens consolidated into a solid mass, occupying the center of the flower. The females are solitary and rather smaller. It is common in the Happy Valley woods, Hongkong, but is not known to come from elsewhere. The foliage is nearly the same as that of *G. cambogia*, but the male pedicels are much shorter and the anthers more numerous." (*Bentham's Flora Hongkongensis, p. 25.*)

36498 to 36527. TRITICUM AESTIVUM L. **Wheat.**
(*T. vulgare* Vill.)

From Tashkend, Turkestan. Presented by Dr. Richard Schroeder, Tashkend Agricultural Experiment Station. Received October 14, 1913.

"Our Turkestan spring wheats are often sown in the late fall or in the winter and do fairly well, though our winter is rather hard. They are sown on nonirrigated land and stand drought exceedingly well, better than durum. The most of our precipitation we get in the spring, maximum in March, the summer and fall being exceedingly dry, some years without a drop of rain, so I think that our spring wheat will not suit your Southern States, nor even your Central States, Kansas for instance, for they must suffer from rust in rainy summers. But in California and Utah, where they do not have summer rains, these wheats will probably be found of high value." (*Extract from Dr. Schroeder's letter, dated October 3/16, 1913.*)

36498. "No. 181. Spring."
36499. "No. 251. Spring."
36500. "No. 341. Spring."
36501. "No. 357. Spring."
36502. "No. 370. Spring."
36503. "No. 371. Spring."
36504. "No. 414. Winter."
36505. "No. 420. Spring."
36506. "No. 421. Spring."
36507. "No. 424. Winter."
36508. "No. 432. Winter."
36509. "No. 433. Spring."
36510. "No. 435. Winter."
36511. "No. 438. Winter."
36512. "No. 520. Winter."
36513. "No. 524. Winter."
36514. "No. 528. Winter."
36515. "No. 537. Spring."
36516. "No. 553. Winter."
36517. "No. 622. Winter."
36518. "No. 639. Winter."
36519. "No. 694. Spring."
36520. "No. 708. Spring."
36521. "No. 787. Winter."
36522. "No. 792. Winter."
36523. "No. 800. Winter."
36524. "No. 804. Winter."
36525. "No. 888. Winter."
36526. "No. 889. Winter."
36527. "No. 896. Winter."

36528. HIBISCUS WAIMEAE × (?).

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Agricultural Experiment Station. Received October 24, 1913.

"*Ruth Wilcox.* A very vigorous, freely branching shrub with good foliage, upright growth, and light-gray bark. Leaves cordate, crenate, blunt, 2¾ to 4½ inches wide, 3 to 5 inches long, light green, shiny, pubescent on both sides, petiole 1½ inches long. Flowers 6 inches wide, pure white, no eye, petals wide, column crimson toward the tip, 4 inches long, stigma scarlet, filaments crimson, bracts six to eight, greenish brown, peduncle 1 inch long. Flower opens at noon, lasts two days, has delicate perfume. Best white thus far bred. Self seeding.

"A hybrid between the varieties *May Damon* [described as itself a hybrid between two native varieties, *Kauai* white and *Beatrice*], and *Knudsen* white, one of the three horticultural forms of the native *Hibiscus waimeae*." (*Wilcox and Holt, Ornamental Hibiscus in Hawaii, Bul. 29, Hawaii Agricultural Experiment Station.*)

36529. ARBUTUS CANARIENSIS Duhamel. **Madronho.**

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received October 23, 1913.

"The madronho is becoming very rare here, but it is still found in the mountain ravines. It will not stand frosts." (*Perez.*)

"It is one of the most beautiful shade trees that is grown around Naples and should be tested for park and street purposes in Florida and southern California. Its clean pink and green bark and dark-green foliage make it a most strikingly beautiful object." (*Fairchild.*)

36530. SPHENOSTYLIS STENOCARPA (Hochst.) Harms.

From Amani, German East Africa. Presented by Dr. A. Zimmerman, director, Kaiserliches Biologische Landwirtschaftlichen Institut. Received October 13, 1913.

See S. P. I. No. 31194 for previous introduction and description.

36531. DIOSPYROS KAKI L. f. **Persimmon.**

From Sibpur, near Calcutta, India. Presented by the Superintendent, Royal Botanic Gardens. Received October 20, 1913.

36532. ANNONA MURICATA L. **Soursop.**

From Honolulu, Hawaii. Collected by Mr. R. A. Young, of the Bureau of Plant Industry. Received September 6, 1913.

"A seedling soursop producing fruits weighing up to 1½ pounds each. Collected July 28, 1913. On the authority of Mr. T. F. Sedwick, the quality may be said to be unusually fine. Fruit of this flavor would make a very delicious sherbet. The tree is in the yard of Mr. Frank Cooke, in the Kaimuki district of Honolulu." (*Young.*)

36533. ORYZA LONGISTAMINATA A. Chev. and Roehrich. **Perennial rice.**

From Nogent-sur-Marne, France. Presented by the director, Jardin Colonial. Received October 24, 1913.

"Seeds of perennial rice discovered in French West Africa by M. Ammann, chief of the chemical service of this establishment."

A full discussion of this interesting variety is given in La agriculture pratique des pays chauds, vol. 11, pt. 1, pp. 89 to 94 and 265 to 278, and vol. 11, pt. 2, pp. 433 to 458 (1911).

36534. CUCUMIS MELO L. **Muskmelon.**

From Leghorn, Italy. Presented by Mr. Leon Pöhm de Sauvanne, American vice consul. Received October 22, 1913.

"This melon has a cream-white flesh or pulp, is very aromatic and sweet, has a smooth skin, measures about 6½ by 8½ inches, and weighs from 4 to 5 pounds." (*De Sauvanne.*)

36535. BELLUCIA COSTARICENSIS Cogniaux. **Papaturro agrio.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received October 27, 1913.

"Shrub with large flowers and yellow fruits of the size of a gooseberry, and with strongly pronounced taste, between sweet and sour. Known only in the valley of Diquis, and the name given it by Wercklé does not appear very appropriate." (*Pittier, Las Plantes Usuales de Costa Rica, 1908.*)

36536 to 36545.

From Petrograd, Russia. Presented by Mr. Raphael Zon, of the U. S. Forest Service, who secured them from Mr. W. A. Dubiansky, Imperial Botanic Garden, Petrograd. Received October 25, 1913.

36536 to 36540. CALLIGONUM spp.

36536. CALLIGONUM ARBORESCENS Litw.

"Trans-Caspian Kara Kum."

Distribution.—A shrub about 10 feet high, found in the region of southwestern Asia east of the Caspian Sea. This species and the one following have proved excellent sand binders in Turkestan. (See S. P. I. Nos. 9583 and 9594.)

36537. CALLIGONUM CAPUT-MEDUSAE RUBICUNDUM Herder.

"Trans-Caspian Kara Kum."

36538. CALLIGONUM CAPUT-MEDUSAE Schrenk.

"Trans-Caspian Kara Kum.

36539. CALLIGONUM ERIOPODUM Bunge.

"Trans-Caspian Kara Kum."

36540. CALLIGONUM SETOSUM Litw.

"Trans-Caspian Kara Kum."

36541. ELYMUS sp.

"A good fodder grass which stands a great deal of alkali in the soil, but requires some moisture." (*Zon.*)

36542 to 36544. ELAEAGNUS ANGUSTIFOLIA L. **Oleaster.**

36542. "Forma *spontanea* Litw. Stands alkali and sandy soil well." (*Zon.*)

36543. "Forma *sphaerocarpa* Litw. Buchara. It is not afraid of frosts; grows equally well on very alkaline and shifting sands. The fruit is less palatable than that of *E. angustifolia* forma *culta* or *E. angustifolia spontanea*." (*Zon.*)

36544. "Forma *culta* Litw. Trans-Caspian prairie, Buchara. In gardens on sandy soils of the valley of the River Amu-Darya. Fairly palatable edible fruit." (*Zon.*)

36545. AELUROPUS LITTORALIS (Gouan) Parl.

"A splendid grass for sands. It yields hay of high quality; is not afraid of very heavy frosts." (*Zon.*)

36546 to 36548. AVENA SATIVA L. **Oat.**

From Petrograd, Russia. Presented by Mr. Basil Benzin, Department of Agriculture. Received February 12, 1913.

36546 to 36548—Continued.

36546. "(No. 20.) Local oats, unirrigated, from Vernoe district, Semiryetchensk Province. Crop 1912." (*Benzin.*)

"A commercial sample of a small yellow oat, probably of the Sixty-Day type (C. I. No. 750)." (*C. W. Warburton.*)

36547. "(No. 111.) Oats, from Pishpek district, Semiryetchensk Province. Crop 1912." (*Benzin.*)

"An ordinary commercial sample. Grain of the Sixty-Day type, but lighter in color (C. I. No. 716.)" (*C. W. Warburton.*)

36548. "(No. 114.) Swedish Select oats, irrigated, from Tashkend district, Syr-Darya Province. Crop 1912." (*Benzin.*)

"Typical of the variety (C. I. No. 717)." (*C. W. Warburton.*)

36549. CYAMOPSIS TETRAGONOLOBA (L.) Taub. **Guar bean.**

From Whittier, Cal. Presented by Mr. R. S. Woglum, of the Department of Agriculture. Received October 29, 1913.

"During the summer of 1911 I collected a few seeds of the Gawarfulli bean at Nagpur, Central Provinces, India. This seed was planted this spring in our garden here in Whittier and we secured about 30 plants." (*Woglum.*)

36550. PAHUDIA RHOMBOIDEA (Blanco) Prain. **Tindalo.**

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received November 1, 1913.

"A large forest tree, attaining a height of 25 meters. The tindalo is one of our most valuable timber trees and is not found outside of the Philippines. It would unquestionably succeed well in Porto Rico and Panama, but is too tender for Florida." (*Wester.*)

"The tindalo is a tree reaching a height of 25 to 30 meters [80 to 90 feet] and a diameter of 60 to 80 cm. [24 to 32 inches], occasionally up to 120 cm. [4 feet]. It is usually without buttresses and has a somewhat regular bole 12 to 15 meters [37 to 46 feet] in length. The crown, one-half the height of the tree, is broad spreading, base shaped, semiopen, and partly deciduous during the dry season. The tindalo has a wide distribution throughout the islands, but is not abundant. It is found scattered usually on dry, shallow, or rocky soil on the low ridges and hills along the coast. Less frequently it is scattered in the edges of the dipterocarp forests. The bark is about 10 mm. [two-fifths of an inch] in thickness, creamy yellow in color, and has an uneven surface, due to the saucerlike depressions made by the shedding of the outer layer. It is covered with numerous corky pustules, and sheds in scroll-shaped patterns. The inner bark is brownish yellow in color. The leaves are alternate, simple, compound, with three [sometimes four] pairs of leaflets. These are smooth with white bloom beneath, from 3½ to 10 cm. [1½ to 4 inches] long and from 3 to 5 cm. [1 to 2 inches] wide. The sapwood is white to creamy brown; the heartwood is yellowish red, becoming very dark with age. It is heavy, hard, durable, not difficult to work, has a fine, usually straight grain, takes a beautiful finish, and is almost free of the defect of warping. Tindalo has the following uses: Fine furniture, cabinet making, fine interior finish (doors, floors, stairways, panels, etc.), railway ties, shipbuilding, and general construction purposes." (*Whitford, Principal Forest Trees of the Philippines, p. 39.*)

36551 to 36560. MEDICAGO SATIVA L. **Alfalfa.**

From Poona, India. Presented by Rao Sahib G. K. Kelkar, Extra Deputy Director of Agriculture. Received November 3, 1913.

Description by Mr. Gammie, Imperial Cotton Specialist, taken from Mr. Forster Main's letter dated April 4, 1913.

"From botanical examination it seems that the specimens do not show practically any appreciable difference, the only slight differences which were noticed being the more or less hairy nature of the leaves, the prominent or obscure toothing of their margins, the greater or less emargination of their tips and the smaller or larger size of the same."

36551. "(No. 1.) Grown at Ganeshkhind Garden from seed obtained from Manavadar. Has small obovate-cuneate leaflets three-fourths to 1 inch long by one-fifth to one-fourth inch broad, hairy on the under surface, midrib, and nerves, with the apex emarginate and retuse."

36552. "(No. 2.) Grown at Ganeshkhind Garden from seed obtained from Rajkot. Has less hairy leaflets with less prominent teeth."

36553. "(No. 3.) Grown at Ganeshkhind Garden from seed obtained from Palitana No. 1. Teeth of leaflets more prominent."

36554. "(No. 4.) Grown at Ganeshkhind Garden from seed obtained from Palitana No. 2. More or less like Manavadar No. 1. (S. P. I. No. 36551.)"

36555. "(No. 5.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger. Less hairy, large leaflets 1¼ to 1½ inches long by one-fourth to one-half inch, oblanceolate, less emarginate, teeth rather obscure."

36556. "(No. 6.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Umrala). Teeth of leaflets prominent, leaflets small, hairy, less emarginate. The flowers showed no difference."

36557. "(No. 7.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Godhra). Teeth of leaflets prominent, leaflets small, hairy, less emarginate."

36558. "(No. 8.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Botad). Leaflets small, teeth prominent."

36559. "(No. 9.) Grown at Ganeshkhind Garden from seed obtained from Bhownugger (Kundla). Leaflets small, teeth prominent."

36560. "(No. 10.) From Junaghar. A new sample for your trial."

36561. ROLLINIA ORTHOPETALA A. DC.

Seeds from S. P. I. No. 22512 grown at the Plant Introduction Field Station, Miami, Fla., in 1912. Received November 6, 1913.

"From its behavior at Miami this tree promises to be a success in south Florida. It should be tried on the edge of the Everglades. Mrs. Fairchild and I both found the fruit delicious." (*David Fairchild.*)

See S. P. I. No. 27579 for previous introduction and description and Plate I for an illustration of a fruiting branch of this tree.

36562. ANNONA CHERIMOLA × SQUAMOSA.

Grown at the Plant Introduction Field Station, Miami, Fla., from Garden No. 1803, tree B. Received November 3, 1913.

"A fruit resulting from the cross of S. P. I. No. 26731, *Annona cherimola*, ♀, and S. P. I. No. 26741, *Annona squamosa*, ♂. I made this cross in May, 1910. The work was done between five and six o'clock in the evening, as you know *squamosa* pollen is ripe at that time. The petals of the *cherimola* were forced open and the pollen dropped in." (*Simmonds.*)

36563 and 36564.

From Chang Chun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received October 25, 1913.

36563. LESPEDEZA sp. **36564.** MELILOTUS ALBA Desr.

36565 and 36566. LINUM USITATISSIMUM L. Flax.

From Bombay, Poona, India. Presented by Mr. William Burns, economic botanist. Received November 1, 1913.

36565. "From Punjab. Flax which is grown after the rice crop." (*Burns.*)

36566. "From the United Provinces, Jalaun district. Grown at the Orai farm. Flax which is grown after the rice crop." (*Burns.*)

36567 and 36568.

From Santa Cruz, Argentina. Presented by Mr. H. W. Reynard. Received November 7, 1913.

36567. FABIANA IMBRICATA Ruiz and Pavon. (?)

"*Matta verde.* Grows on mud flats and river valleys; is of a softer nature than the *Matta negra* and does not attain quite such a height, about 2 feet to 2 feet 6 inches." (*Reynard.*)

"An evergreen shrub of heathlike appearance, ultimately reaching 6 to 8 feet in diameter and in height; erect in habit when young, ultimately spreading. Branches downy, long, and tapered, densely furnished with short, slender twigs, from one-half to 2 inches long. These twigs are themselves completely covered with tiny, pointed, 3-angled leaves, one-twelfth inch long, and, in June, are each terminated by a solitary pure white flower. Corolla five-eighths to three-fourths inch long, tubular, but narrowing towards the base, with the rounded shallow lobes at the apex reflexed; calyx bell shaped, one-twelfth inch long.

"Native of Chile; introduced in 1838. This beautiful shrub is unfortunately rather tender, and at Kew, although it occasionally survives the winter, has never been a success in the open. In milder and more upland localities it is a shrub of great beauty, flowering freely and transforming each branch into a slender raceme of blossom. It likes a light soil, and can be increased easily by late summer cuttings in gentle heat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 549–550.*)

36568. BERBERIS sp. **Barberry.**

"*Califata.* A prickly plant, very hardy, attains a height of about 5 feet, has a little black berry which is eaten by the natives of the country; grows in corners sheltered from the wind in little clumps of from 5 to 15 bushes, but occasionally one sees a bush standing alone on the high pampas." (*Reynard.*)

36569 and 36570.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 7, 1913.

36569. EUONYMUS sp.

"(No. 1889a. Hsiao wu tai shan, Chihli Province, China. August 27, 1913.) A very small Eunoymus, somewhat like *E. radicans*, but of upright growth. Rare, found in a stony bank. Of value as a small lining shrub along pathways and shrubbery beds." (*Meyer.*)

FRUITING BRANCH OF THE ROLLINIA (ROLLINIA ORTHOPETALA A. DC.). (S. P. I. No. 36561.)

A Brazilian fruit closely related to the cherimoya and sugar-apple. It is perhaps a more showy fruit than either, the carpels being tinged with orange, and certainly deserves the praise given it by Baker, Fischer, and others. Natural-size photograph (P10149FS), by E. L. Crandall, of fruit borne at the Miami Field Station by S. P. I. No. 22512, August 21, 1912.

THE TACACO, A COSTA RICAN VEGETABLE (POLAKOWSKIA TACACO PITTIER).

These fruits are borne on a rapidly growing vine resembling other cucurbit vines. They are picked green, boiled in water, and form a favorite addition to vegetable soups, or are pickled. It is a near relative of the chayote (*Chayota edulis*). Natural-size photograph (P6119FS), by E. L. Crandall, of S. P. I. No. 26245, November 19, 1909. (See S. P. I. No. 36592.)

36569 and 36570—Continued.

36570. LILIUM sp. **Lily.**

"(No. 1033. Hsiao wu tai shan, Chihli Province, China. August 4, 1913.) A lily of vigorous growth, bearing orange-red flowers, which have dark spots on their petals. Cultivated in Tië ling temple. Of use as an ornamental garden perennial for the cooler sections of the United States; can stand considerable shade." (*Meyer.*)

36571 and 36572. RUBUS sp. **Blackberry.**

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture, at the request of Mr. Carlos Wercklé. Received December 13, 1913.

36571. "*Castille* blackberry, famous on account of its extraordinary size and taste." (*Van der Laat.*)

36572. "*Stone* blackberry, famous on account of its extraordinary size and taste." (*Van der Laat.*)

36573. BACTRIS UTILIS Benth. and Hook. **Palm.**

From San Jose, Costa Rica. Presented by the Department of Agriculture, San Jose. Received December 16, 1913.

"By far the largest and best variety."

"Near *Guilielma* (*Bactris*) *speciosa*, from which, however, it is easily distinguished. This species of palm grows in Costa Rica on the eastern slope in the luxuriant primeval torests at an altitude of from 2,500 to 4,000 feet. The mealy fruits, about the size and shape of a large pigeon's egg, have when cooked very much the taste of potatoes, and form in many places one of the principal foods among the Indians. At San Jose and Cartago I saw this fruit piled up in heaps in the market, whither it had been brought for sale by the Indians from Orosi. It is called by the inhabitants *Pechevaye*." (*Oersted, Videnskabelige Meddelelser, 1858, p. 46.*)

36574. ALEURITES MONTANA (Lour.) Wils. **Mu-yu (wood-oil) tree.**

From Tak Hing, southern China. Presented by Rev. J. K. Robb, American Reformed Presbyterian Church. Received December 27, 1913.

"Seeds of a tree that is found in this vicinity. The natives tell me that the oil is extracted from the seeds, and even by their crude methods of operation the yield is as much as 25 per cent of the total weight. This seems rather large to me, though I must confess to complete ignorance on the subject." (*Robb.*)

36575. GARCINIA MANGOSTANA L. **Mangosteen.**

From Kingston, Jamaica. Presented by the Department of Agriculture. Received November 4, 1913.

36576. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

From Fakumen, Manchuria. Presented by Dr. S. A. Ellerbeck, Mukden Hospital, who secured them from Mr. F. W. S. O'Neill, Fakumen. Received November 1, 1913.

"A bean called *white eyebrow bean*. This is the nearest I can obtain to the bean you mention. It is said that this bean produces plenty of oil. The name seems to arise from the white edge from which the sprouts come" (*O'Neill.*)

36577 to 36587. TRITICUM AESTIVUM L. **Wheat.**
(*Triticum vulgare* Vill.)

From Sydney, New South Wales, Australia. Presented by Mr. G. Valder, at the request of Mr. W. M. Carne, of the Department of Agriculture. Received November 7, 1913.

36577. "Bathurst No. 2."
36578. "Cedar."
36579. "Cleveland."
36580. "Cowra No. 3."
36581. "Genoa."
36582. "John Brown."
36583. "Jonathan."
36584. "Wagga No. 19."
36585. "Warren."
36586. "Rymer."
36587. "Thew."

36588. BENZOIN sp.

From Chang Ning, Kiangsi, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received October 28, 1913.

"Seeds of a large shrub which grows on the hills here. The berries and leaves are very fragrant and are used by the Chinese as a flavoring for their food." (*Bousfield.*)

36589. CITRUS GRANDIS (L.) Osbeck. **Pomelo.**

Received from Mr. Robert A. Young, of the Bureau of Plant Industry, September 6, 1913.

"Seeds from pomelos estimated to be at least 6 inches in diameter, served on the S. S. *Manchuria* from Hongkong to San Francisco. The fruit was served broken into sections. The flesh was white and sweet, with scarcely any acidity, and was very agreeable to the taste. The texture was rather coarse. The steward said they came from Canton and were called *Canaloni (?) melons.*" (*Young.*)

36590 to 36592.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received November 11, 1913.

36590 and 36591. LICANIA PLATYPUS (Hemsl.) Fritsch. **Sansapote.**

36590. "Seeds of the smaller sansapote from the Pacific coast. Large fruit with highly aromatic and sweet flesh; very good." (*Wercklé.*)

36591. "Seeds of the large sansapote from the Atlantic slope, at 500 meters altitude; fruit weighs up to 4 pounds; one of the best fruits, by many people preferred to *Achradelpha* (*Lucuma*) *mammosa.*" (*Wercklé.*)

36592. POLAKOWSKIA TACACO Pittier. **Tacaco.**

"A cucurbitaceous plant, the fruit of which is used as a green vegetable. It is a near relative to the chayote, but the fruit is smaller, fusiform, set with stiff spines at the base, and of quite a distinct taste. It is one of the primitive foods of the native Indians of Costa Rica, where it grows wild in fresh, shady places of the temperate region, and its use as a vegetable has been readily adopted by the Spanish Costa Ricans. Nowadays the plant is at least semicultivated on the central plateau. To grow it, a whole mature fruit is set in a rich, loose leaf mold, with the spiny end up and almost showing at the surface. The vines spread on the ground or on low bushes or supports. The fruits, which are about 2½ inches long and 1½ inches broad, hang from short peduncles and are picked when still green. After taking away the basal spines, they are boiled in water either whole or cut into small pieces, or pickled, or made into preserves. They are also a favorite addition to the native vegetable soups." (*H. Pittier.*)

For previous introductions, see S. P. I. Nos. 26244 and 26245.

For an illustration of the fruit of this cucurbit, see Plate II.

36593 to 36595. COLOCASIA sp. **Dasheen.**

Grown at the Plant Introduction Field Station, Brooksville, Fla.

36593. "A selected strain of the Trinidad dasheen (or taro) in which the flesh, when baked or boiled, is dry and mealy, of good flavor, and creamy white in color. The large corms on exposure to the air for a time after cooking, however, may become slightly grayish in color. (Grown from a single hill selected from S. P. I. No. 15395 in 1911. The crop was tested for its edible qualities in 1912 and again in 1913. In the former year the quality was uniform. In the latter a number of plants produced tubers of quality differing from the above, though the bulk of the crop was uniform. The variation was quite possibly due to the accidental mixing of other tubers before planting.)" (*R. A. Young.*)

36594. "A selected strain of the Trinidad dasheen in which the flesh when cooked is mealy, slightly nutty in flavor, and grayish white in color. (The source of this selection is the same as for S. P. I. No. 36593.)" (*R. A. Young.*)

36595. "A selected strain of the Trinidad dasheen in which the flesh when baked or boiled is creamy white in color, moist, and of fair flavor. The flesh of the corms sometimes becomes slightly grayish a short time after cooking. (The source of this selection is the same as that of S. P. I. Nos. 36593 and 36594.) Mixed with the foregoing were some tubers of S. P. I. No. 36595, in which the flesh of the corms is grayish white, mealy, and slightly nutty when cooked." (*R. A. Young.*)

36596. PANAX QUINQUEFOLIUM L. **Ginseng.**

(*Aralia quinquefolia* Decne. and Planch.)

From Seoul, Chosen (Korea). Presented by Miss Katharine Wambold, through the American consul general. Received November 8, 1913.

"It is very difficult to grow the plants, the Koreans tell me. They start them in small masses of stones. It takes several years to get even small plants. September, I am told, is the proper time to buy seeds. However, it is becoming increasingly difficult to obtain them." (*Wambold.*)

36597. SOLANUM QUITOENSE Lamarck.

From Santander-Quilichao, Colombia. Presented by Mr. D. G. Prado. Received November 7, 1913.

"*Lulo.* A fruit resembling a tomato. The fruit, when ripe, is yellow, has a sour, pleasant taste, and is used to make cooling drinks. It lasts 8 or 10 days after cut, and in the States it may be cultivated with profit to supply the soda fountains with a fruit to make flavoring extracts. I believe it can be grown in Florida, California, and Texas." (*Prado.*)

36598. LAGENARIA VULGARIS Ser. **Gourd.**

From Lagos, Southern Nigeria. Presented by Mr. J. A. de Gage, King's College, Lagos, at the request of Mr. G. Regnard, Port Louis, Mauritius. Received November 7, 1913.

36599. JUGLANS AUSTRALIS Griseb. **Walnut.**

From Buenos Aires, Argentina. Presented by Mr. A. J. Zübiaur, through Mr. W. F. Wight, of the Bureau of Plant Industry. Received November 10, 1913.

"Seeds secured from some locality in the north of Argentina. This species occurs from Tucuman northward to the Bolivian frontier, and possibly even beyond." (*Wight.*)

36600. LINUM USITATISSIMUM L. **Flax.**

From Bombay, Poona, India. Presented by Mr. William Burns, economic botanist. Received November 13, 1913.

"From Benares, United Provinces." (*Burns.*)

36601. MALUS sp. **Apple.**

From Tsingchowfu, Shantung, China. Presented by Rev. W. H. Hayes. Received November 6, 1913.

"*Lin-kin* apple. A species of crab apple which I found to make an admirable grafting stock. Seeds were secured from a perfectly ripe fruit which was grown in my garden from trees which I had set out for grafting purposes. It is not easy to get seed from the Chinese, as they almost always pull the fruit before it is ripe." (*Hayes.*)

36602. CASIMIROA EDULIS La Llave. **White sapote.**

From Pasadena, Cal. Presented by Mr. Knowles A. Ryerson. Received November 15, 1913.

"*Harvey.* Grown at Sierra Madre, Cal. It is the best variety growing in southern California at the present time. This particular tree is growing at the foot of the mountains in a soil which is pure, coarse, decomposed granite. It never receives irrigation of any description and but scant cultivation, yet bears enormous crops every year. The frost of last January (1913) caught a few of the blossoms only." (*Ryerson.*)

Distribution.—A tree found from the States of Sinaloa and Durango, in Mexico southeastward to Guatemala.

For an illustration of the fruit and leaves of the white sapote, see Plate III.

36603 to 36605.

From Honolulu, Hawaii. Presented by Mr. Chester J. Hunn, assistant horticulturist, Hawaii Agricultural Experiment Station. Received November 17, 1913.

36603. PERSEA AMERICANA Miller. **Avocado.**
(*P. gratissima* Gaertn. f.)

(No. 149. Hawaii Agricultural Experiment Station.) "About 20 years ago Admiral Beardsley, leaving Guatemala for Hawaii, carried with him a number of avocados for consumption on the way. He saved two seeds, wrapping them in cotton-wool and packing them in ice. Arriving in Honolulu, he gave one seed to Judge Wiedeman and the other to Mrs. E. K. Wilder. The former was planted at 1402 Punahou Street, now occupied by the McDonald, and although both seeds grew, the *McDonald* is far superior in quality and blooms earlier.

"Form roundish to spherical; size medium to medium large; cavity small, shallow, and flaring; stem somewhat slender and very long, varying from 6 inches to 15 inches in length; surface undulating, very hard, coriaceous, and markedly pitted; color dark olive green to purple with small, very abundant, irregular-shaped yellowish dots; apex a mere dot, slightly depressed; skin very thick and woody, separating freely from the pulp; flesh yellow in color, running into green at the skin, fine grained, oily, and somewhat buttery, 75 per cent of fruit; seed fairly large, roundish, conical, just a trifle loose in the cavity; flavor rich and nutty. Season July to January.

"The tree is quite vigorous, but tends to grow upward rather than to branch out, possibly due to confinement. This 'pear' is especially noteworthy, since it will keep for a long time after being removed from the tree. Mr. G. P. Wilder reports that he has kept the fruit for 2½ weeks after removal from the tree. The tree carried fruit over through the blossoming period of the following season. Height 40 feet, spread 20 feet.

FRUIT AND LEAVES OF THE WHITE SAPOTE (CASIMIROA EDULIS LA LLAVE).

Many people become fond of the characteristic bitter aftertaste of this otherwise very sweet fruit. The tree is a vigorous grower and quite frost resistant and deserves to be better known in Florida and California. Natural-size photograph (P7177FS), by E. L. Crandall, of fruit from Miami, Fla., July, 1910. See S. P. I. No. 36602 for a description of the Harvey variety.

THE ROSA MANGO OF BAHIA, BRAZIL. (S. P. I. NOS. 36688 AND 36841.)

This is one of the commonest named varieties in Brazil. It is of a very striking rich rose-red color, has a medium-sized stone, and is said to be of good quality. It reproduces itself from seed, ripens in December, and appears to be a free fruiter. Natural-size photograph (P15389FS), by Dorsett, Shamel, and Popenoe, Bahia, Brazil, December 15, 1913.

36603 to 36605—Continued.

"Valuable as a late avocado. Its woody skin, which is really a shell, is in its favor for shipping." (*Higgins, Hunn, and Holt, Bulletin No. 25, Hawaii Agricultural Experiment Station, The Avocado in Hawaii, p. 43.*)

Cuttings.

36604. PERSEA AMERICANA Miller. **Avocado.**

(No. 1035. Hawaii Agricultural Experiment Station.) "The nutmeg avocado. Fruit from the original [McDonald] avocado tree of the Guatemala or 'hard-shelled' type was collected in December, 1907. A seedling grown from this seed was placed in the orchard on March 17, 1908. This tree came into bearing in December, 1911, four years from seed.

"Form roundish to spherical; size medium; cavity small, shallow, and flaring; stem short and inclined to be thick; surface undulating, very hard; coriaceous and markedly pitted; color greenish purple to black, with very abundant, irregular-shaped yellowish dots; apex a mere dot, slightly depressed; skin very thick and woody, separating fairly well from the pulp; flesh yellow in color, running into green at the skin, fine-grained, a trifle juicy, oily, and somewhat buttery, 68 per cent of the fruit; seed large, roundish, flattened at the base, fitting tightly in the cavity; flavor rich and nutty. Season late. This tree is quite vigorous and is pyramidal in shape. Height 15 feet, spread 8 feet." (*Hunn, in Annual Report of the Hawaii Agricultural Experiment Station, 1912, p. 38.*)

Cuttings.

36605. CARICA PAPAYA L. **Papaya.**

"No. 2762. A type of papaya which bears two forms of fruit, round and oval. Mr. Higgins, in the papaya bulletin, calls these two types the *pentandra* and *elongata*." (*Extract from C. J. Hunn's letter dated December 4, 1913.*)

"The fruit of this type which I tested was of the round form and, though yellow and fully ripe, was so firm that it could scarcely be dented with the fingers. The flesh was rather thin but of very good quality." (*R. A. Young.*)

36606. PLEIOGYNIUM SOLANDRI (Benth.) Engler.

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, director, Department of Agriculture and Stock. Received November 13, 1913.

"These seeds are from a tree growing here which has not fruited before for years." (*Bailey.*)

"A moderate-sized tree, the trunk occasionally acquiring a very great thickness. Timber soft when cut, though it afterwards becomes hard and tough. Diameter 24 to 36 inches, height 40 to 60 feet." (*Maiden, Useful Native Plants of Australia, p. 599.*)

36607. PRUNUS sp. **Plum.**

From Siberia. Presented by Mr. Ustin Gudjakoff, at the request of Mr. Frank N. Meyer. Received at the Plant Introduction Field Station, Chico, Cal., November 8, 1913.

"Yellow Ussurian plum, very hardy, and its fruits possess a fine characteristic aroma. Could be used in hybridization work to create perfectly hardy plums for cold regions." (*Extract from F. N. Meyer's letter, February 4, 1913.*)

36608. ALEURITES FORDII Hemsley. **Tung (wood-oil) tree.**

From China. Presented by Mr. J. L. Young, Chinese Agricultural Commissioner, Chicago, Ill. Received November 17, 1913.

"These nuts were gathered from the best oil-producing district in Szechwan Province. The trees are quite large, sometimes attaining a height of approximately 30 or more feet and a diameter of from 15 to 20 inches. The branches are spreading, the leaves are rather large, smooth, and more or less heart shaped. The tree thrives in many parts of China, but does best in the upper Yangtze Valley, and in some portions of the southern part of the country. The tree grew wild a few years back, when attempts were made to cultivate it. When cultivated, the kernels are planted in garden beds something like the nurseries in this country, and when the young plants become a foot and a half high, they are transplanted into a favorable location and soil about 20 feet apart each way, and the soil is kept well stirred between them until the trees come into bearing. Under favorable conditions the tree begins to bear at about three years, but in ordinary cases about four years are necessary to bring fruit." (*Young.*)

36609. RUBUS sp. **Raspberry.**

From New York. Presented by Dr. Ira Ulman. Received November 18, 1913.

"This plant resulted from a series of crosses of every sort of promising berry, both of European and domestic variety, I could obtain from abroad, some 212 (if my memory serves me rightly), the remarkable feature of which is that in flavor it partakes of the *Rubus idaeus* quality, in growth characteristics totally unlike any sort I know of. The canes in spring grow 3 to 4 feet and come into full fruit June 15, which of itself is an unusual feature, on laterals quite like other sorts. There is a very heavy crop till August, then these canes begin to wither; meanwhile, terminal buds start, as do new canes. These grow up straight 6 feet or more, and now on the terminal of the cane flowers from 50 to 125 in number appear, and from this on to frost these canes are covered with buds, blossoms, and unripe fruit. Frost finds them covered as above described, and literally thousands are frozen. The plants sucker so freely that I have counted 50 to one plant." (*Ulman.*)

36610 to 36616.

From Dodoma, German East Africa. Presented by Mr. W. Sperling, Kaiserliche Bezirksamtmann. Received November 13, 1913.

36610 to 36615. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) **Sorghum.**

36610. "*Utwasimba.* Stems without sugar; grain suitable for making native beer and meal." (*Sperling.*)

"(C. I. 550.) Apparently a pink kafir with a rather slender 8-inch head, small pink seeds, and short black glumes." (*C. R. Ball.*)

36611. "*Ganvaii.* Stems give sugar; grain mostly used for native beer." (*Sperling.*)

"(C. I. 551.) A rather loose 10-inch head similar to *Planter* sorgo, but with medium-large, somewhat flattened white seeds and short brown glumes." (*C. R. Ball.*)

36612. "*Ndagumo.* Stems contain sugar; grain used in making meal and beer. Can also be eaten in a raw condition." (*Sperling.*)

"(C. I. 551.) A very compact oval-oblong pendent head with small yellowish-white seeds and short brownish-to-black glumes." (*C. R. Ball.*)

36613. "*Lugugu.* Edible stems; grain makes very good meal." (*Sperling.*)

"(C. I. 553.) Variety *roxburghii.* The typical lax panicle with open, yellow glumes and small yellowish white oval seeds." (*C. R. Ball.*)

36610 to 36616—Continued.

36614. "*Chiganzacha-Uvana.* Stems without sugar; grain gives good meal and beer." (*Sperling.*)

"(C. I. 554.) Variety *roxburghii.* Typical lax panicle with black, open glumes and large white seeds." (*C. R. Ball.*)

36615. "*Utwewampela.* Sugar-containing stems; grain used for flour and beer manufacture." (*Sperling.*)

36616. PENNISETUM GLAUCUM (L.) R. Br. **Pearl millet.**
(*P. typhoideum* Rich.)

36617. ACTINIDIA ARGUTA (S. and Z.) Planch.

From Fusan, Chosen (Korea). Presented by Mr. George H. Winn. Received November 14, 1913.

"A vine which bears very delicious fruits, and we enjoy sauce or preserves made of it very much. It closely resembles the guava of southern California in taste and consistency." (*Winn.*)

36618 to 36621. EUCALYPTUS spp.

Received from the Forest Service, Washington, D. C., November 19, 1913.

36618 and 36619. EUCALYPTUS CREBRA Mueller. **Iron-bark.**

36618. From Los Angeles, Cal. "This iron-bark is usually a slender tree of pleasing aspect, growing about 100 feet high and 2 to 3 feet in diameter. The trunk is commonly straight and even in size. According to Maiden, Sir William Macarthur pronounced it 'the most picturesque of the different species of eucalypts called iron-bark.' The bark, like that of other iron-barks, is rough and persistent. It is harder, darker, and more deeply furrowed than the bark of either *Eucalyptus paniculata* or *Eucalyptus siderophloia*, approaching closely to *Eucalyptus sideroxylon* in these respects. The wood is reddish, with inlocked fibers. The branchlets are slender and drooping, presenting with the foliage a pleasing appearance. The leaves are narrow, equally green on the two surfaces, and quite thin; veins and oil dots not conspicuous. The flowers are very small, in clusters of 3 to 7, usually occurring in panicles. The seed cases are very small, goblet shaped or cup shaped, with minute valves. The narrow-leaved iron-bark endures a greater variety of climatic conditions than do the other iron-barks. It is the only one of the group that will endure the climate of the dry, hot interior valleys of the Southwest. At Fresno, Cal., it grows vigorously, and young trees have grown well at the experiment station farm near Phoenix, Ariz. It endures minimum temperatures of 18° to 20° F. and maximum temperatures of 110° to 118°. It is said to be content with poor soil. Judging by experience with the species thus far, it ought to grow in most valley and hillside situations in the Southwest. On account of the wood being so hard, tough, and elastic, the timber is useful for a great variety of purposes. It is one of the highly valued timber trees of Australia. The wood is durable under ground, and is consequently much used for posts, railway ties, and piles. It is also useful for bridge material, for wagon making, and for a great variety of technic purposes." (*McClatchie, Bureau of Forestry Bulletin No. 35, Eucalypts Cultivated in the United States, 1902, p. 59.*)

36619. From Australia. Received August, 1910. The same species as S. P. I. No. 36618, but the seed received direct from Australia and not from California.

36618 to 36621—Continued.

36620. EUCALYPTUS GUNNII Hook. f.

From Australia. Received August, 1910. "The tree is usually not a tall one, but in some situations in Australia it is said to rise to a height of 250 feet. No trees growing in the Southwest, however, give promise of attaining a great height, though some of them are already 60 feet high. The trees are sometimes crooked and irregular in growth. In alpine regions they are said to be mere shrubs. The bark of the trunk is usually rough and brownish, and is continually flaking off, leaving the outer part smooth. The branches are usually smoother. The foliage is denser and darker than that of many eucalypts, frequently being confined to the ends of the branches, however. The leaves of the young trees are roundish, and opposite on the stem, and those of the adult tree are scattered and lance shaped. They are usually shiny and more or less stiff. The flowers are of medium size and the seed cases usually nearly top shaped. This species grows well near the coast and for some distance inland. It is a very hardy species, and, since in Australia it grows to an elevation of 4,000 to 5,000 feet, it ought to succeed in elevated regions of the Southwest. It endures fairly well the summer heat of the interior valleys, and during winter grows thriftily, even though the temperature fall to 20° F. each night. The tree does not furnish an especially useful timber. When it grows straight it is used by artisans for many purposes, and it also makes a fair fuel. It is a very promising species as a forest cover for mountain situations not subject to high summer temperatures. The sap of the alpine form of the tree is said to be used by the aborigines of Australia for making a kind of cider." (*McClatchie, Bureau of Forestry Bulletin No. 35, p. 64.*)

36621. EUCALYPTUS STUARTIANA Mueller.

From Australia. "The trees of this species never attain a very great size, but they make a comparatively rapid growth during the first 10 years, in some cases reaching a trunk diameter of 1 foot and a height of 30 to 40 feet during that period. The tree usually grows quite erect, with a somewhat stocky appearance. The bark of the trunk and main branches is rough and more or less fibrous. It is of a grayish-brown color outside and is salmon colored next the wood. The leaves of the young seedlings and of young suckers are opposite on the stem, and roundish or lance shaped, usually having a distinct bloom on the surface. The later leaves are scattered, lance shaped, or sickle shaped, shiny, and equally dark green on the two surfaces. When crushed they give forth a pleasant odor, somewhat resembling that of apples. The flowers are of medium size, usually in compact clusters of three to eight. The deciduous covering of the flower buds is cone shaped. The seed cases are rather small, and are commonly nearly top shaped. The species thrives at and near the coast, but does not do well in the dry, hot valleys of the interior. It endures minimum temperatures of 10° to 18° F., and it therefore may be planted in higher latitudes and at greater elevations than most species. Upon account of its resistance to frost, this eucalypt is useful for a forest cover, for windbreaks, and for shade in ravines and on fairly moist hillsides and mountains where, on account of too heavy winter frosts, other species would not thrive. The tree furnishes a timber that is hard, but, not being straight grained, is somewhat difficult to split. It is useful for fence posts and for fuel. According to Baron von Mueller, it is employed to some extent for furniture manufacture in Australia." (*McClatchie, Bureau Forestry Bulletin No. 35, p. 81.*)

36622. TRITICUM AESTIVUM L. **Wheat.**
(*T. vulgare* Vill.)

From Bogliasco, Italy. Presented by Dr. F. Franceschi. Received November 17, 1913.

"This is *Gentile rosso* (pale red) wheat. Among the varieties of grain cultivated most extensively in Tuscany the one named *Gentile rosso* stands out as typical. This seems to correspond to the *Triticum hybernum aristis carens spica*, or red grained, a variety of the broad species founded by Linnæus. The name *Gentile rosso* is not general in Tuscany, but this grain is known in various regions under various names, which causes confusion frequently. It is also called '*red calbigia*,' '*Sicilian calbigia*,' '*German calbigia*,' etc. These names refer in all cases to a grain having the following characteristics: With long spike unarmed or furnished with short rudimental remains [of awns], especially toward the top of the spike; with glumes slightly reddish; with medium-sized grains, lengthened, with deep median indentation, and brownish red integument (clear tobacco color); with straw rather large, robust, whitish. The *Gentile rosso* has medium development, good stooling, earliness of maturity, and all the good characters of high productivity." (*Translated from Grano da Seme Gentile Rosso, Amministraziono A. e M. di Frassineto, p. 5.*)

36623. PERSEA BORBONIA (L.) Spreng.
(*P. carolinensis* Nees.)

From New Orleans, La. Procured through Mr. Sam Marshall, superintendent, Audubon Park. Received November 7, 1913.

"A large tree with bark broken into flat ridges; leaf blades elliptic-oblong, 5 to 15 cm. long, often acuminate at both ends, bright green and lustrous above, glaucescent and finely reticulated beneath; sepals ascending, the inner ovate, 2 to 3 times longer than the outer, acutish; fruits obovoid or globose-obovoid, 1 to 1.5 cm. long, dark blue or nearly black, lustrous." (*Small, Flora of the Southeastern United States.*)

To be grown for hybridization purposes and for possible stocks for the avocado. Its slow growth may dwarf the avocado and its hardiness make it of value at the northern limit of avocado growing. (*Fairchild.*)

36624 and 36625.

From Brazil. Presented by Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, who received them from Mr. Murdo McKenzie, Sao Paulo, Brazil. Received November 19, 1913.

36624. SORGHASTRUM STIPOIDES (H. B. K.) Nash. **Jaragua grass.**
(*Chrysopogon avenaceus* Benth.)

"Makes a big stand of hay and is of succulent growth." (*Melvin.*)

For previous introduction, see S. P. I. No. 34699.

36625. MELINIS MINUTIFLORA Beauv. **Molasses grass.**

"It does not grow upright but more like a vine." (*Melvin.*)

For previous introduction, see S. P. I. No. 36051.

36626. BERBERIS HETEROPHYLLA Jussieu. **Barberry.**

From Chubut, Argentina. Collected by Mr. J. R. Pemberton, Buenos Aires, Argentina. Received November 17, 1913.

"An edible species of Berberis, occurring everywhere in the foothills of the Cordilleras. These seeds were collected at a latitude of 43° S. The fruits are blue in color and are about three-eighths of an inch in diameter. They are of sweet flavor, resembling Muscat grapes, and the juice is so blue that it stains the mouth like huckle-

berries. Its local name is *califata*, and Mr. Pemberton believes it will make an excellent hedge plant, growing about 4 feet high. It is extremely productive, and Mr. Pemberton has often sat down near bushes of these *califatas* and made a meal of these blue berries. This species should thrive in the Puget Sound region and along the coast of California, and possibly in the South Atlantic coast region. It should be tested also as far north as Philadelphia." (*Fairchild.*)

Distribution.—A low shrub found in southern Chile and southward to the Straits of Magellan.

36627. LILIUM sp.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received November 18, 1913.

"*Pah Woh.* The leaves have a thin skin over them; this is peeled off and the fleshy part is cooked in water. It should be planted in light soil and carefully cultivated. It, like the *San Yah* [S. P. I. No. 36629], is considered as very healthful, and the two are often sold together." (*Gee.*)

Bulbs.

36628. CARICA PAPAYA L. **Papaya.**

From Colombo, Ceylon. Presented by the American consul, Colombo. Received November 28, 1913.

36629. DIOSCOREA SATIVA L.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received November 18, 1913.

"*San Yah* [*Shan yao*]. This is grown in light clay soil and is used much as the sweet potato. It is used a great deal as food in the fall and is thought to have very decidedly beneficial effects upon one's health. It may also be used in soups with meat." (*Gee.*)

36630. LINUM USITATISSIMUM L. **Flax.**

From Geneva, Idaho. Procured from Mr. F. W. Boehme. Received November 20, 1913.

A variety adapted to high altitudes. Procured for experimental purposes by the Office of Cereal Investigations.

36631. DIOSPYROS KAKI L. f. **Persimmon.**

From Washington, D. C. Received, through Mr. S. A. Jones, from a tree growing on the grounds of Mr. Theodore Barnes, November 25, 1913.

"This tree is about 7 years of age and passed through a temperature of 14° below zero in 1911 with but slight injury." (*Peter Bisset.*)

Scions.

36632. ANNONA DIVERSIFOLIA Safford. **Ilama.**

From Tlatlaya, District of Sultepec, State of Mexico, Mexico. Presented by Mr. William Brockway. Received November 22, 1913.

"Seeds of the red-fleshed cherimoya. The natives here do not call this species either an anona or cherimoya; they call it *Ilama.*" (*Brockway.*)

36633. CARICA PAPAYA L. **Papaya.**

From Costa Rica. Presented by Mr. A. M. Hicks, Chicago, Ill. Received November 24, 1913.

"Fruits especially large and fine; as large as three or four ordinary ones." (*Hicks.*)

36634 to 36638.

Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 27, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe, unless otherwise stated.

36634 to 36637. CITRUS spp.

36634. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. **Tangerine.**

"(No. 27. Bahia, Brazil, November 28, 1913.) Tangerine. Twelve bud sticks of the *laranja cravo*, or tangerine, from select tree No. 5, in Dr. Fortunato da Silva's grove, Cabulla. For trial in California and Florida."

Bud sticks.

36635. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"(No. 35. Bahia, Brazil, December 4, 1913.) Navel-orange bud sticks from plat 1, tree 8–6, grove of Col. Frederico da Costa, Matatu. One of the older trees, about 15 years of age; height 18 feet; spread 20 feet; circumference of trunk 23¼ inches; headed 11 inches from the ground; 4 main branches; dense foliage; dark-green color. There were no variations in the type of fruit observed. Navel very small. Very little mottle-leaf and very little gummosis. Very few and very small dead branches. This tree is one of the best types of navel oranges in the section of the grove in which plat 1 is located. There were 171 June-crop fruits and 8 December crop, making a total of 179. Should be tried in California for an improved type of navel orange."

36636. CITRUS AURANTIUM L. **Bitter orange.**

"(No. 23. Rio de Janeiro, Brazil, November 3, 1913.) Bud wood of the *laranja da terra*, from Shr. A. G. Fontes' ranch, Banca Velha, near Rio de Janeiro. This variety is most highly esteemed as a stock. The trees grow to large size, are very thorny, and show great vigor of growth. The leaves are distinguished by large winged petioles, an inch across. The fruits at this time are small, about one-half inch in diameter. The farm superintendent at Fontes' ranch says: 'This variety is a very fine stock for *Selecta*, *Pera*, tangerine, and other commercial varieties.' Trees of this variety should be tried in California for seed production for stocks. It should be given a very careful trial in all citrus districts in the United States for stock purposes."

36637. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"(No. 37. Bahia, Brazil, December 4, 1913.) Navel orange from plat 2, tree 5–1, Col. Frederico da Costa's grove, Matatu. Height of tree 13 feet; spread 16 feet; height of head 11½ inches; number of main branches 3. Foliage dense and dark green. There were 85 June-crop fruits and 250 of the December crop, making a total of 335 fruits, evenly distributed through the tree. Navel very small and mostly rudimentary. Very little mottle-leaf or gum disease. Very little dead wood; small branches only. Tree about 8 years old and in very healthy and vigorous condition. Should be tried in California for an improved type of navel orange."

Bud sticks.

36638. ROSA LAEVIGATA Michx. **Rose.**

"(No. 25. Rio de Janeiro, Brazil, November 4, 1913.) A climbing shrub, reaching to the tops of large trees in a wild state; its stems armed with hooked spines. Leaves three-foliolate, brilliantly glossy green, and quite smooth; leaflets shortly stalked, oval or ovate, simply toothed, 1½ to 4 inches long, half as wide, of thick, firm texture. Flowers 3 to 6 inches

36634 to 36638—Continued.

across, pure white, fragrant, solitary, and borne on a very bristly stalk; sepals stout, 1 inch or more long, with leafy tips more or less bristly. Fruit red, three-fourths inch wide, somewhat longer, thickly set with bristles one-sixth inch long, the sepals persisting at the top for a long time.

"Native of China, but long naturalized in the southern United States, and first named in 1803 from specimens collected in Georgia by Pursh, the American botanist. How it reached America from China does not appear to be known, but it was cultivated in Georgia in 1780. Afterwards it received a multitude of names, the best known of which was '*sinica*.' Perhaps the most beautiful of all single wild roses when seen at its best, it is, unfortunately, too tender for the open air except in such places as Cornwall. Elsewhere it can only succeed in exceptionally sheltered sunny corners. A cross between this species and some other rose (perhaps a form of *indica*) is called 'Anemone.' This is hardy on a wall, and bears several large, lovely, blush-colored flowers in a cluster." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 432.*)

36639. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Khartum, Egyptian Sudan. Presented by the Director of Agriculture and Forests. Received October 11, 1913.

"*Dura sufa*, which was obtained from the White Nile Province."

36640 to 36642.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received November 22, 1913.

36640. CAYAPONIA sp.

"From Paraguay. With pretty, ornamental fruits." (*Buysman.*)

36641. COFFEA sp.

"From Rhodesia. Can perhaps be tried and crossed with other species." (*Buysman.*)

36642. IPOMOEA sp.

"From Argentina. With large rose flowers. (This species Kew can not trace.)" (*Buysman.*)

36643 to 36652. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

From Newchwang, Manchuria. Presented by Mr. George F. Bickford, vice consul. Received November 24, 1913.

Quoted notes by Mr. Bickford.

36643. "Large black beans, *Ta hei tou*. From Hsin Min-fu."

36644. "Large, round, black bean, *Ta lieh hei*. From near Hsin Min-fu."

36645. "Small black beans, *Hsiao heo tou*. From Hsin Min-fu."

36646. "Green soy beans, *Ching tou*. From Chang Chun, north of Mukden."

36647. "White eyebrow soy bean of the Fakumen meadow land."

36648. "White eyebrow soy bean, *Pei mei*. From Sze Ping Kai, northeast of Mukden."

36649. "Golden yellow soy beans, *Chin hwang tou*. From north of Mukden."

36650. "Yellow soy bean, *Hwang tou*. From Liao River valley."

36643 to 36652—Continued.

36651. "Golden round soy bean, *Chin yuan* or *Chin yuan tou*. From north of Mukden."

36652. "Yellow soy bean, *Yuan tou*. From Kung Chuling, south of Harbin. Round."

36653. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Max.)

From Peh tuan lin tza, northern Manchuria. Presented by Mr. N. Kristiansen, at the request of Dr. S. A. Ellerbeck, Mukden Hospital. Received November 29, 1913.

"Manchurian bean, from Heilung chiang, northern Manchuria." (*Kristiansen.*)

36654. CITRUS LIMONIA Osbeck. **Lemon.**

From Barberton, Transvaal, South Africa. Procured from Harris & Todd. Received December 3, 1913.

"My brother-in-law spent several years at Barberton, in the Transvaal. He tells me that a neighbor has several wonderful lemon trees, which he calls 'Spanish lemon.' He says that the fruit is large, contains about a pint of juice, and the trees are very prolific, so much so that they break down if not propped. The fruit is almost seedless, with a thin, smooth skin; strongly acid." (*A. D. Shamel.*)

"Your description of the tree and fruit is quite correct (not the pint of juice). We have grown the fruit here 7 inches long and 4 inches through. They come fairly true to seed, but the majority are not so good as the variety kept true by grafting." (*Harris & Todd.*)

Bud sticks.

36655. PENNISETUM GLAUCUM (L.) R. Br. **Pearl millet.**
(*P. typhoideum* Rich.)

From Nyassaland, Africa. Presented by Mr. T. J. Treffry, assistant agriculturist, Government farm, Port Herald. Received December 3, 1913.

"Pearl millet, grown here; weight per acre about 8 hundredweight; planted in clumps about 3 feet apart each way. It is grown largely as a native food crop in the lower elevations and along the banks of the Zambezi." (*Treffry.*)

36656 to 36658. SOLANUM sp. **Potato.**

From Oruro, Bolivia. Presented by Mr. C. N. Mitchell, through Mr. W. F. Wight, of the Bureau of Plant Industry. Received December 3, 1913.

"Potatoes that have been handed to me by one of the natives here. From the region of Huailla-Marca, in the Province of Carangas, Bolivia, in the department of Oruro. These are not wild potatoes, but a kind which he recommends as suitable for your purposes." (*Mitchell.*)

Tubers.

36656. "(No. 2.) Color brown and shape oblong." (*Mitchell.*)

36657. "(No. 3.) Lead color. Name *Ajahuiri*." (*Mitchell.*)

36658. (No notes.)

36659. CARICA PAPAYA L. **Papaya.**

From Barberton, Transvaal, South Africa. Procured from Harris & Todd. Received December 3, 1913.

36660. CUCUMIS MELO L. **Muskmelon.**

From Constantinople, Turkey. Presented by Mr. D. A. Davis, general secretary, Young Men's Christian Association. Received December 2, 1913.

"Seeds of a very delicious kind of muskmelon which we have in abundance in the early summer. They are oblong, with a smooth, yellow, very thin rind. The melons are very juicy." (*Davis.*)

36661. COUTAREA HEXANDRA (Jacq.) K. Schum.
(*C. speciosa* Aubl.)

From Puerto Bertoni, Paraguay. Presented by Mr. Guillermo F. Bertoni, Estacion Agronomica. Received December 3, 1913.

"*Quina de Pernambuca.* A pretty little tree which reaches a height of nearly 5 meters (17 feet) in good soil; in poor soil it attains a height of 2 to 3 meters (6 to 10 feet). As a medicinal plant its properties are similar to the Cinchona, and it is much used in Paraguay and Brazil. Besides its medicinal qualities, it is a pretty, ornamental plant, of good appearance, not very leafy, but with symmetrical branches. It loses its leaves in the winter, and in the spring, when it begins to bud, it is covered with pretty yellow flowers with a sweet perfume. It is originally from the wooded region of Paraguay and Brazil and is found frequently in stony soil on the high banks of rivers and ravines. It is a plant of the warm regions, but it resists cold fairly well. It stands a minimum temperature of 3 to 5° below zero C. (25° F.) perfectly, and it is quite probable that it could resist a lower temperature." (*Bertoni.*)

36662 to 36675.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., December 15 and 22, 1913.

Quoted notes by Mr. Meyer.

36662. JUGLANS REGIA SINENSIS C. DC. **Walnut.**

"(No. 1890a. Ying tau ko, Chihli Province, China. September 12, 1913.) A large variety of Chinese walnut, coming from an elevated locality, which, however, is much sheltered by mountains. To be tried especially in the lower Rocky Mountain valleys."

36663. JUGLANS REGIA SINENSIS C. DC. **Walnut.**

"(No. 1891a. Peking, China. October 15, 1913.) A large variety of Chinese walnut, coming from the mountains west of Peking. For trial in the lower Rocky Mountain valleys."

36664. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. **Wild peach.**
(*Prunus davidiana* Franch.)

"(No. 1892a. Peking, China. September, 1913.) About 1,500 pounds of wild-peach stones collected from cultivated trees in various parts of Chihli Province, China. As there is a great deal of variation among these seeds they may be graded according to size, the larger ones to be used as stocks for vigorously growing stone fruits, like peaches, apricots, and certain plums, while the smaller ones can be used as stocks for small, slow-growing stone fruits, as bush berries, sand cherries, dwarf plums, and almonds. A goodly portion of these seeds should also be devoted to testing against various diseases our stone fruits are suffering from, with the object of finding out whether they will be less susceptible to such diseases when grafted on this remarkably healthy wild peach."

36665. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. **Wild peach.**
(*Prunus davidiana* Franch.)

"(No. 1894a. Peking, China. July 25, 1913.) A very vigorously growing form of wild peach tree found in the well-trampled courtyard of the Chinese

36662 to 36675—Continued.

inn in Peking. Said to be a hybrid. The trunk, 5 feet above the ground, measures 5 feet 6 inches in circumference. Chinese name *Mau tau shu*, meaning 'hairy peach tree.' Not to be used for stock, but for seed-bearing purposes."

36666. CASTANEA MOLLISSIMA Blume. **Chestnut.**

"(No. 1893a. Peking, China. October 9 to 15, 1913.) About 250 pounds of Chinese chestnuts, said to come from the Pang shan region to the northeast of Peking.

"This North China chestnut has no value as a lumber tree, being of a low-branching open-headed growth, while the tree does not grow tall, specimens over 40 feet in height being rare. It seems, however, much more resistant to the bark-fungus disease than the American chestnut, and it might be utilized in certain hybridization experiments to combine the good qualities of both the American and the Chinese parents into one tree. This chestnut loves a well-drained, decomposed granite soil, preferably at the foot of hills or of mountains; it also seems quite averse to strong winds and thrives best in well-sheltered valleys. In its native localities it is but little cultivated, the peasants being content to plant a few trees here and there along the bases of hills and on sloping fields, and the trees in general look much thriftier when close to rocks and bowlders than when seen on fairly level fields. From the nature of the tree and the climate in which it grows one might conclude that sheltered valleys in the foothill section of the Rocky Mountain region will probably suit this chestnut better than any other section in the United States, and some serious attempts should be made to establish it in these regions as a hardy nut-bearing tree."

36667. ZEA MAYS L. **Corn.**

"(No. 1895a. Peking, China. September 29, 1913.) A variety of flint maize, said to be of dwarf growth and of very early ripening habits, occupying the ground only from 8 to 10 weeks. Chinese name *To kwei boun tze*, meaning 'earliest of all maize.'"

36668. ZEA MAYS L. **Corn.**

"(No. 1896a. Hwai-lai, Chihli Province, China. July 30, 1913.) A dwarf-growing variety of white flint maize, of early ripening habits. Fit for regions with short growing seasons."

36669. ZEA MAYS L. **Corn.**

"(No. 1897a. Shih-men, Chihli Province, China. August 3, 1913.) An early-ripening variety of yellow-seeded flint maize, said to be of dwarf growth. Fit for regions with short growing seasons."

36670. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 1898a. Hwai-lai, Chihli Province, China. July 30, 1913.) A variety of sorghum with reddish brown seeds borne in dense heads; growing not higher than 3 to 4 feet. Of value in regions with short growing seasons. Chinese name *Wu ta lang kaoliang*, meaning 'Tom Thumb sorghum.'"

36671. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 1899a. Tan hwa, Chihli Province, China. September 1, 1913.) A dwarf variety of sorghum with large, dense heads and reddish brown seeds. Fit for regions having short growing seasons."

36662 to 36675—Continued.

36672. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 1900a. Tan hwa, Chihli Province, China. September 1, 1913.) A dwarf variety of sorghum with large, dense heads and white grains. Fit for regions having short growing seasons."

36673. CHAETOCHLOA ITALICA (L.) Scribner. **Millet.**
(*Setaria italica* Beauv.)

"(No. 1901a. Tan hwa, Chihli Province, China. September 1, 1913.) A short-season variety of bird's millet having dense ears. Chinese name *Hsiao mi tze*. Fit for regions having short growing seasons."

36674. PANICUM MILIACEUM L. **Proso.**

"(No. 1902a. Tan hwa, Chihli Province, China. September 1, 1913.) A variety of proso of low growth, early ripening habits, and big yield. Fit for regions having short growing seasons. Chinese name *Huang mi*."

36675. AVENA NUDA Hoejer. **Oat.**

"(No. 1903a. Ta shiang yang, Chihli Province, China. August 1, 1913.) A good variety of hull-less oats, much cultivated in the higher mountain regions of northern China. A coarse flour is made from it, which is eaten in the form of noodles, dumplings, and cakes. Chinese name *Yu mei*. Especially worth trying in the intermountain sections of the United States. May be of great value to oatmeal manufacturers."

36676. PHOENIX DACTYLIFERA L. Date.

From Egypt. Brought over by Prof. S. C. Mason, of the Bureau of Plant Industry, who received it as a present from Sheik Abbes Mohammed Ahmed, Elsheikh Issa, Keneh, Egypt, November 1, 1913.

Mosque. "As the Arabic name, rendered 'The Date by the Land,' referring to its being a seedling tree growing by the border of a cultivated field, is an awkward one, I prefer to name this the *Mosque* date, as half of the fruit and offshoots of the original tree had been vowed to his mosque by the owner. The fruit is slightly softer than semidry and inclined to be a bit sticky. It is of medium size, yellow, ripening to amber brown, thin skinned, the flesh very rich and sugary, the seed small. I consider that it has no superior as a packing date among all Egyptian varieties." (*Mason.*)

Offshoot.

36677 and 36678.

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 28, 1913.

36677. COLOCASIA sp.

"(No. 1036. Peking, China. November 3, 1913.) A dry-land taro, or dasheen, cultivated in North China. The Chinese call the large main corms 'males,' and these are considered much coarser than the cormlets, which are called 'females.' The latter are especially appreciated when served boiled and steamed hot with molten sugar over them. Chinese name *Uto* or *Yu tao*." (*Meyer.*)

"This variety is similar to those previously received from Japan and North China and is of a quality greatly inferior to some of those from warmer regions." (*R. A. Young.*)

36678. LILIUM sp. **Lily.**

"(No. 1040. November 3, 1913.) A Chinese lily, said to come from southern China. The scales are eaten boiled in soup, sweetened with honey or sugar, and this is considered a very fine dish. Chinese name *Pai gho*." (*Meyer.*)

36679. OLEA VERRUCOSA (R. and S.) Link. **Wild olive.**

From Wellington, Cape Province. Presented by Mr. C. W. Mally, entomologist, Department of Agriculture, Cape Town, Cape of Good Hope. Received December 5, 1913.

"These were gathered at Wellington, Cape Province." (*Mally.*)

For previous introduction and description, see S. P. I. No. 9559.

36680 to 36686. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Victoria, Kamerun. Presented by Dr. Karl Ludwigs, director of the Experiment Station, at the request of the governor. Received December 2, 1913.

Quoted notes by Dr. Ludwigs.

36680. "No. 1. *Wuteguineakorn.* Native name *Mekossie.* Sample from Joko."

36681. "No. 2. *Fullahkorn.* Native name *Bakoa.* Sample from Joko."

36682. "No. 3. *Tikarkorn.* Native name *Mfonghuya.* Sample from Joko."

36683. "No. 4. *Andjiki* or *Teleri.* Sample from Ngaundere."

36684. "No. 5. *Djolomri.* Sample from Ngaundere."

36685. "No. 6. *Daneri.* Sample from Ngaundere."

36686. "No. 7. *Angom.* Sample from Ngaundere."

36687. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Lagas, Mexico. Presented by Mr. Theodore C. Hamm, American consul, Durango, Mexico. These seeds were procured at the suggestion of Hon. Albert S. Burleson, Postmaster General. Received December 6, 1913.

"The fruits of the avocado, or aguacate, as it is locally called, grown in the Lajas district. After some little search and inquiry, aguacates were found which had been brought in from the very district named in the letter of the Agricultural Explorer in Charge [near the Indian village of Lagas in western Mexico. This village is described as being located on a small plateau of 4,000 or 5,000 feet elevation, near the Chico River, about 175 miles southwest of the city of Durango, and something like 100 miles from the coast]. The aguacate grows extensively throughout southern and southwestern Durango, and the fruit is highly prized locally. It is used chiefly in salads and as a substitute for butter. Large quantities are sold in the Durango market at prices ranging from 3 to 6 centavos (1½ to 3 cents, American currency) each." (*Hamm.*)

36688 to 36715.

Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 4 and 27, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36688. MANGIFERA INDICA L. **Mango.**

"(No. 1. Rio de Janeiro, Brazil. October 25, 1913.) Bud sticks of the *Rosa* mango, from the nursery of Eickhoff, Carneiro Leão & C. This variety is said originally to have come from Bahia. The fruit is of good size, in shape very similar to the *Alfonso* of Bombay, the left shoulder more prominent than the right and the apex slightly beaked. The color is a bright golden yellow, with a red cheek. The flesh is said to be so free from fiber that it can be eaten with

36688 to 36715—Continued.

a spoon, and the flavor is said to be excellent. Its season here is December. It bears good crops here, in spite of a fungus which attacks the flower spikes."

See S. P. I. No. 36841 for another introduction and Plate IV for an illustration of the fruit of this mango.

36689. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"(No. 38. Bahia, Brazil. December 4, 1913.) Navel orange from plat 2, tree 6–1, Col. Frederico da Costa's grove, Matatu. Tree 13 feet high, 15 feet spread, trunk 18¼ inches in circumference. Foliage dense and dark green. On it were 44 June-crop fruits and 327 of the December crop, making a total of 371 fruits. The fruits are very uniform and show little or no variation in type. Fruits very evenly distributed all through the tree. Navel very small in size. Very little mottle-leaf and very few small dead branches. Tree 8 years old. This tree is a very promising type of navel and should be given a thorough trial in California for an improved type of navel orange. The fruits are the best in quality in all respects of any of this variety yet tested here."

Bud sticks.

36690. MANGIFERA INDICA L. **Mango.**

"(No. 3. Rio de Janeiro, Brazil. October 25, 1913.) Bud sticks of the *Augusta* mango, from the nursery of Eickhoff, Carneiro Leão & C. This variety, like *Carlota*, is not considered as good as *Itamaraca*, though of larger size. Its season is December."

36691. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"(No. 39. Bahia, Brazil. December 4, 1913.) Navel orange, plat 2, tree 11–1, Col. Frederico da Costa's grove, Matatu. Tree 11 feet high; 13 feet spread; circumference of trunk 13¾ inches; headed 16 inches from the ground. Foliage very dense; dark green in color. On it were 50 June fruits and 59 of the December crop, making a total of 109 fruits. In addition, we found many flowers, fruits just set, and very small, medium, and large fruits on this tree. The fruiting habit of this tree seems to tend toward production all the year round. For this reason this type should be tried in California with a view to securing a type which will fruit during a longer period than the Washington navel."

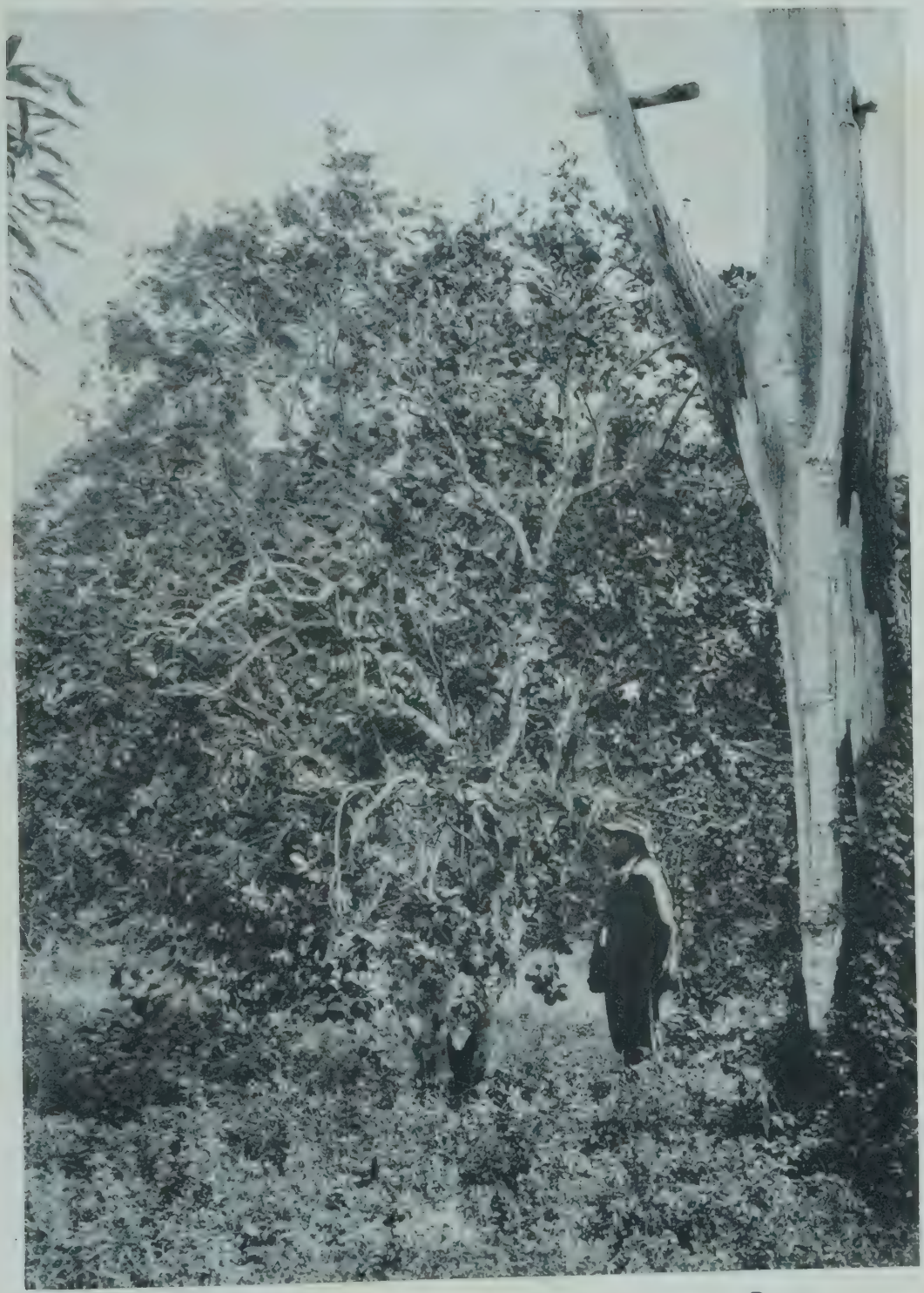
36692. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"(No. 40. Bahia, Brazil. December 4, 1913.) Navel orange from plat 2, tree 8–4, Col. Frederico da Costa's grove, Matatu. Tree 13 feet high, spread 18 feet, circumference of trunk 20½ inches. Foliage very dense and dark green. On it were 262 June-crop fruits and 21 December-crop fruits; the latter, in this case, will probably not ripen until March or April, or even later. The entire crop of this tree could, without exception, be included in the June crop. This very great difference in habit of fruiting from neighboring trees led us to secure bud sticks for propagation, in the hope of securing a type of navel which will fruit in California at a different season from existing types. Very little gum disease or mottle-leaf and very few small dead branches. Tree 8 years old and in very healthy and vigorous condition."

For an illustration showing the manner of growth of the navel-orange tree and the ultimate size which it attains at Bahia, Brazil, see Plate V.

36693. ACROCOMIA SCLEROCARPA Mart. **Palm.**

"(No. 21. Rio de Janeiro, Brazil. November 4, 1913.) Fruits of a Brazilian palm, sold in the market here. The outer shell is removed and the firm, white flesh surrounding the seed is eaten."



AN OLD NAVEL-ORANGE TREE IN AN ORCHARD AT BAHIA, BRAZIL.

This illustration shows the ultimate height and size which navel-orange trees attain in this region. This orchard of Col. Barretto's at Cabulla is probably the oldest in Bahia. It was planted over 40 years ago and is still productive. Mr. A. D. Shamel, of the Brazilian Exploring Expedition, is shown at the right. Photograph (P14501FS), by Dorsett, Shamel, and Popenoe, December 13, 1913. (See S. P. I. No. 36692.

FRUIT OF THE MU-YU, THE SOUTH CHINESE WOOD-OIL TREE (ALEURITES MONTANA (LOUR.) WILS.). (S. P. I. No. 36897.)

A single seed and portions of a dried fruit, showing the characteristic ridges of the outer shell of the fruit, called by the southern Chinese the Mu-yu. This is a more tropical species than the Tung-yu (wood-oil) tree (*A. fordii*), but its oil is probably quite as valuable. Natural-size photograph (P13746FS), by E. L. Crandall, December, 1913.

36688 to 36715—Continued.

36694. CITRUS AURANTIUM L. **Bitter orange.**

"(No. 13. Rio de Janeiro, Brazil. October 30, 1913.) *Laranja da terra.* Bud sticks from the Catramby ranch, Banca Velha, near Rio de Janeiro. From a large, vigorous, and healthy tree. Should be propagated and fruited for trial as stocks in both California and Florida."

36695. HIBISCUS MUTABILIS L.

"(No. 24a. Bahia, Brazil. November 12, 1913.) Seeds of a beautiful malvaceous shrub found in a garden near Barra, in the outskirts of the city. The plant is 15 or 18 feet high, with large, entire, light-green leaves, resembling those of the abutilon. The flowers are 4 inches in diameter, double; the color a beautiful rose pink. If not already grown in Florida, this plant is well worthy of a trial."

36696. MORUS ALBA L. **Mulberry.**

"(No. 17. Rio de Janeiro, Brazil. November 1, 1913.) Cuttings of a mulberry growing on the property of Shr. José Elias Esteres, Rua Sao Gonçalo, in Nictheroy, across the bay from Rio de Janeiro. This appears to be the same variety as the one grown at the Catramby ranch, Porta d'Agua. We sampled a preserve made from the fruits of Shr. Catramby's tree, and it struck us as being different from the mulberries grown in the United States and of very good flavor. The fruit appears to be rather small, but the seeds are also small. It may prove of value for the manufacture of jams and preserves."

36697. CARICA PAPAYA L. **Papaya.**

"(No. 27a. Bahia, Brazil. November 27, 1913.) Seeds of the large-fruited papaya, called here *mamão da India.* The specimen from which these seeds were taken measured 11¼ inches in length and 5¾ inches in width at its broadest point. The flesh was 1¼ inches thick, bright orange color, and of rich, agreeable flavor, practically free from musky odor. This type is sometimes propagated by cuttings, according to Dr. Argollo Ferrão, in order to perpetuate choice strains. The fruits are prepared for eating by making four or five shallow incisions from base to apex and allowing the milky juice to run out; after standing for a day or two they are ready for the table. Should be grown in southern Florida, in connection with the papaya breeding work."

36698. CITRUS GRANDIS (L.) Osbeck. **Pomelo.**

"(No. 1a. Bridgetown, Barbados, British West Indies. October 10, 1913.) Grapefruit, purchased in the town of Bridgetown from one of the native women. The fruit cut contained 51 seeds; globular shape, smooth skin, dull ivory-white color; 12½ inches in circumference; flesh tender, no core, fairly juicy, good flavor; badly stained with black-scale smut. Its seedy character prohibits it from being of any special use in the United States unless as a stock for other citrus fruits. Twenty-four cents was paid for 12 fruits."

36699. ZEA MAYS L. **Corn.**

"(No. 2a. Barbados. October 10, 1913.) Yellow flint corn, 14 rows, 38 kernels in a row, dry and sound; evidence of corn earworm attacks at end of cob but not in kernels; ears tightly inclosed by a heavy husk, which extends 1 to 2 inches beyond the end of the ear. Stalks about 4½ feet high, frequently two ears to the stalk. Mr. Shamel's estimate of the yield from the field where the sample was secured is 40 bushels per acre. Hills 4 by 4 feet; hand cultivation; dark, rich soil about 2 feet deep on coral rock. Seed corn dried in the husk on the ridges of houses and in trees. Secured on a return trip to St. John's Church. Corn usually planted from April to June, harvested from October to December.

36688 to 36715—Continued.

At this time (October 10, 1913) 25 to 30 houses were seen, on the comb or ridge of which were from 100 to 300 ears in the husk saved for seed. The ears were tied together by plaited outside husks, one ear on one side of the ridge and one on the other. In the trees the ears were tied in the same way and thrown across the limbs 15 to 20 feet from the ground. We saw the entire stalks fed to cattle, on compost heaps. On a trip of 30 miles we saw fully 400 acres of corn. Mr. Shamel says, 'This appears to be an almost perfect meal corn, equal to what we have in the United States.'"

36700. ANNONA MURICATA L. **Soursop.**

"(No. 3a. Bridgetown, Barbados, British West Indies. October 10, 1913.) Seeds saved from a fruit purchased on the street. The fruit measured 9½ inches long and 15½ inches in circumference. It is oblong in shape and of a slightly greenish color; taste subacid; quality very good. For trial in southern Florida and in southern California."

36701. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"(No. 4a. Rio de Janeiro, Brazil. October 4, 1913.) Seeds from small or, rather, medium, somewhat oblong seedling oranges served on the table of the Hotel International. The fruit is golden yellow; flesh bright golden yellow; good quality, quite juicy; skin thin; two to eight or more seeds. It might be well to grow a few to try out in California and Florida."

36702. MYRCIARIA CAULIFLORA (Mart.) Berg. **Jaboticaba.**

"(No. 5a. Rio de Janeiro, Brazil. October 24, 1913.) Among the fruit trees cultivated in gardens about Rio de Janeiro the jaboticaba is one of the commonest, and certainly one of the most beautiful. The largest trees are 30 to 40 feet in height and fully 40 feet in spread, with dense, dome-shaped heads of light-green foliage. The individual leaves vary in size according to the variety, some being 3 inches while others are not more than 1 inch in length; oblong-lanceolate in form, glossy, light green in color, usually pink in the young stage. The trunk of the tree is often very large, one specimen that we measured being 80 inches in circumference at the base, and it usually branches close to the ground. The bark is smooth, grayish brown in color, reminding one of the bark of the guava and other myrtaceous fruits.

"The name *jaboticaba* is a Tupi word, spelled by some authorities *jabuticaba;* this name is applied only to the fruit, the suffix '*eira*' being added to signify the tree, making the word *jaboticabeira*, or 'jaboticaba tree.' The name is usually pronounced here at Rio de Janeiro as though spelled ja-bu-ti-ca-ba, with the accent on the fourth syllable.

"The tree flowers here in May and June, and the fruit ripens in October and November. As signified by the specific name, *cauliflora*, the fruits are produced on the old wood, and we have seen many trees whose trunks were literally covered with fruits down to within 2 or 3 feet of the ground. The fruiting is not confined, however, to the large wood, but extends clear out to the ends of the smallest branches; the fruits are sessile or nearly so, and a tree covered with them from the ground to the ends of the small limbs presents a rather unusual appearance, to say the least.

"Four varieties are offered by the nurserymen here, but do not seem to be recognized by the people in the rural districts. They come from different parts of Brazil, and probably not more than one or two of them are in general cultivation here. Since they are supposed to come true from seed, it is quite possible that one or more of them may be entirely different species. Their names are *Sao Paulo*, *Murta*, *Corôa*, and *Branca;* the variety *Sao Paulo* may be

36688 to 36715—Continued

Myrciaria jaboticaba Berg, which, according to Barbosa Rodrigues, is commonly known as *jaboticaba de Sao Paulo*. Its foliage is much larger than the common jaboticaba which grows around Rio de Janeiro. *Murta* is said to be a large-fruited variety, but we have seen only young plants of it. *Corôa* we saw in fruit at a local nursery, and it seems to be the common local variety, which is described farther on. *Branca* (white) is a little-known, small-fruited variety.

"The fruits seen in the market here vary greatly in size, but otherwise seem to be about alike. A good specimen is an inch and a half in diameter, round or nearly so, and dark maroon-purple in color, greatly resembling in appearance some of the grapes of the *rotundifolia* type. This resemblance extends to the internal characteristics of the fruit as well, the texture of the flesh, its color and flavor, as well as the seeds, suggesting a grape more than any other temperate fruit. The skin is thick and very tough; it is broken by squeezing the fruit with the thumb and finger, when the pulp slides out into the mouth and the skin is discarded. The pulp is translucent, very juicy, and of a subacid, pleasant flavor, with a rather peculiar tang, which one is not sure to like at first, but which is very agreeable as soon as one becomes accustomed to it. The seeds, one to four in number, are rather large and adhere closely to the pulp; the boys here seem to swallow them, but this may not be a very desirable proceeding from a physiological standpoint. The Brazilians seem almost passionately fond of this fruit, especially the children, who spend hours at a time under the trees hunting for the ripe fruits and then working them off with a long pole if they are where they can not be reached.

"Following is a pomological description of the fruit as purchased in the Rio de Janeiro market and as seen growing in gardens around the city: General form slightly oblate to very broadly pyriform, with a majority of the specimens round or very nearly so; cross section regularly round; length three-fourths to 1½ inches, breadth three-fourths to 1⅝ inches; base of fruit in some cases slightly extended, in others slightly flattened; apex usually slightly flattened, with a small disk and vestiges of the four sepals; surface smooth, somewhat glossy to very glossy, color purplish maroon to maroon-purple when fully ripe; skin one-sixteenth inch thick, tough and leathery, and not easily broken, but separating readily from the flesh, which comes out in a body when the skin is broken; flesh translucent, whitish, jellylike in consistency, full of juice; flavor vinous, with a peculiar tang of its own; seeds normally four, but one to three sometimes abortive. Three seems to be the commonest number, but two is also common, and a few have been seen with five. Shape of seed oval to almost round, flattened laterally, three-eighths to one-half inch long, one-eighth inch thick; seed coats very thin. Practically no cultivation is given the trees we have seen, and we have heard of no other way of propagating them than by seed."

36703. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

"(No. 6a. Rio de Janeiro, Brazil. October 24, 1913.) One hundred and eighty seeds from small, inferior, but somewhat peculiar peaches purchased in the market. This peach is of a rather dirty green color, the flesh white, sometimes slightly tinged with red at the stone. The quality is poor, and there is little juice. Ninety per cent or more were infested with maggots. We have not seen the trees upon which peaches of this kind grow. They may be used for stocks or possibly for breeding."

36704. SOLANUM ACULEATISSIMUM Jacquin.

"(No. 8a. Rio de Janeiro, Brazil. October 23, 1913.) Five fruits secured along the roadside of the Tijuca Drive. They are from 1 inch to 1½ inches in

36688 to 36715—Continued.

diameter and bright red in color. The under sides of the leaves and the branches are quite thickly covered with rather long, sharp thorns. May prove valuable as an ornamental or for breeding."

36705. GREVILLEA BANKSII R. Brown.

"(No. 9a. Rio de Janeiro, Brazil. October 27, 1913.) In foliage this species greatly resembles its congener, *Grevillea robusta*, but its habit of growth is entirely different and its flowers much finer. The trees in the Rio de Janeiro Botanic Garden, from which these seeds were taken, are about 18 feet in height, broad topped, and rather open in growth. The bark is rough, and ashy brown in color. The wood is brittle. The leaves are 6 to 8 inches long, 5 to 6 inches wide, deeply divided, dull green on the upper side and silvery beneath. The flowers, which are borne on spikes 3 to 5 inches long, are a beautiful rose-red in color. May prove of value as an ornamental tree in Florida and southern California."

36706. HELICTERES OVATA Lamarck.

"(No. 10a. Rio de Janeiro, Brazil. October 27, 1913.) A sterculiaceous shrub growing in the Botanic Garden here, somewhat resembling an abutilon in general appearance. Leaves heart shaped, about 4 inches in breadth and 5 inches in length, lanate, bright green in color. The chief interest of this plant lies in its seed pods, which are about the size of almonds and twisted spirally. Should be tried in Florida and California."

36707. CITRUS AURANTIUM L. **Bitter orange.**

"(No. 11a. Rio de Janeiro, Brazil. October 29, 1913.) *Laranja da terra.* Seeds of the bitter orange, or *laranja da terra*, from Shr. Catramby's ranch at Porta d'Agua, a suburb of Rio de Janeiro. For trial in Florida and California as a stock for other citrus fruits, for which purpose it is used here."

36708. SCHINUS TEREBINTHIFOLIUS Raddi.

"(No. 28a. Bahia, Brazil. November 27, 1913.) Seeds of a handsome tree which grows wild along the roadsides here. It greatly resembles the species grown in California under the name of *Schinus terebinthifolius*, and may, in fact, prove to be the same thing. The leaves are deep rich green in color, the leaflets larger and less numerous than in *S. molle*. The berries are borne in rather compact clusters and are bright crimson in color. The tree is of different habit from *S. molle*, and is occasionally used as a hedge plant to good effect. It should be grown in south Florida and southern California."

36709. MYRCIARIA CAULIFLORA (Mart.) Berg. **Jaboticaba.**

"(No. 13a. Rio de Janeiro, Brazil. October 28, 1913. *Jaboticaba*, or *jabuticaba*. Seeds from selected large fruits out of the same lot as No. 5a (S. P. I. No. 36702). The fruits from which these seeds were taken were all an inch or more in diameter, and in most cases contained four seeds each."

36710. ZEA MAYS L. **Corn.**

"(No. 14a. Rio de Janeiro, Brazil. October 30, 1913.) *Catete* variety, grown on the Catramby ranch, Porta d'Agua, near Rio de Janeiro. Field about 20 acres, growing on bottom land and planted in rows 3½ feet apart, the hills checked about 3½ feet apart. Stalks about 8 feet high. Ears about 3 feet from the ground. Ears in silk at this time, usually one ear to the stalk. Cultivated by hand hoeing. Soil rich and black. The crop was planted about August 1 and will be ripe in January. The ranchman says that this is the only variety that does well in this vicinity. He says it can be planted at any time of the year and grows equally well at all times. The two sample ears are nubbins left

36688 to 36715—Continued.

over from the last crop, the ears in the field being 8 to 10 inches long, yellow flint, 12 and 14 rows. The kernels are hard, with a large proportion of horny endosperm and a large germ. Should be tried in Florida and other Southern States."

36711. ZEA MAYS L. **Corn.**

"(No. 15a. Rio de Janeiro, Brazil. October 30, 1913.) Red Peruvian corn purchased in a seed store here. Kernels very large, starchy."

36712. ZEA MAYS L. **Corn.**

"(No. 16a. Rio de Janeiro, Brazil. October 30, 1913.) White Peruvian corn purchased in a seed store here. Kernels very large, starchy."

36713. EUGENIA TOMENTOSA Cambess. **Cabelluda.**

"(No. 17a. Rio de Janeiro, Brazil. October 30, 1913.) The *cabelluda*, a myrtaceous fruit, native of Brazil. The tree is very handsome, with oblong, lanceolate, glossy leaves. The fruits are slightly less than an inch in diameter, oblate in form, orange yellow, the surface covered with a soft down, whence the name *cabelluda*, or hairy. The seeds are very large, one or two to a fruit, and leave but little room for the juicy pulp. The flavor is very peculiar, subacid, with the tang possessed by many of the eugenias. On the whole, the fruit is not one which would be likely to become very popular, but it is well worthy of a trial by those in Florida and California who are interested in rare fruits. From Shr. Catramby's garden at Porta d'Agua, near Rio de Janeiro, and at Nictheroy.

"This myrtaceous fruit, although a native of the State of Rio de Janeiro, is not commonly cultivated in gardens around the city, so far as we have seen. While an occasional tree is seen here and there, it can not compare in popularity with the jaboticaba or the pitanga, two allied fruits also native to this region. When well grown, the tree is very handsome, and would be of value as an ornamental alone. It reaches a height of 20 to 30 feet, with a broad, dome-shaped head of foliage. The leaves are 2 to 4 inches in length and about 1 inch in breadth, oblong-lanceolate, bright green and slightly tomentose above, dull green and tomentose below.

"The name *cabelluda* is the feminine of the Portuguese adjective *cabelludo*, and has reference to the downy tomentum present on both the leaves and the fruits. The tree flowers in June, and the fruits, which ripen in October and November, are sessile and produced on the small branches in great profusion. In general appearance the fruit somewhat resembles a gooseberry. The largest specimens are slightly under 1 inch in diameter, round or nearly so, the skin firm and thick. To eat the fruit one merely places it against his lips, squeezes it until the skin breaks and the seeds with the pulp surrounding them slide into his mouth. The pulp is rather scanty, but is juicy and of pleasant flavor, similar to the wild May-apple of the United States (*Podophyllum peltatum*). The large seeds are surrounded with short, coarse fibers, something on the order of the fibers surrounding the mango seed.

"The cabelluda is said to be tender and suitable only for culture in tropical countries, but it may prove to be adapted to southern Florida, and possibly to southern California as well. Both on account of its value as a fruit and its ornamental appearance it should be given a thorough trial in these regions.

"A pomological description of the fruit, as seen in various gardens around Rio de Janeiro, is as follows: General form round or slightly oblate; cross section round; length about three-fourths inch; width about three-fourths inch; base rounded; apex rounded, crowned by a small disk; surface smooth, downy, color

36688 to 36715—Continued.

golden yellow, with faint longitudinal lines under the skin, giving a ribbed appearance; skin thick and very tough, separating readily from the pulp, rather acid in taste; pulp translucent, yellowish white, aromatic, juicy, scanty in quantity; flavor subacid, suggesting the wild mandrake, or May-apple; agreeable when fully ripe; seeds one to two, surrounded by short fibers, elliptical to oval in form, slightly compressed, about three-eighths of an inch in length."

36714. CASSIA GRANDIS L. f.

"(No. 18a. Rio de Janeiro, Brazil. November 1, 1913.) Seeds of a large leguminous tree producing handsome pink and yellow flowers. Its seed pods are over a foot in length, plump, and very hard. The specimen from which these seeds were secured was growing by the roadside in Nictheroy, across the bay from Rio de Janeiro."

36715. CARAPA GUIANENSIS Aublet. **Andiroba.**

"(No. 20a. Rio de Janeiro, Brazil. November 3, 1913.) *Andiroba.* An Amazonian tree belonging to the Meliaceæ, used to good effect in the Rio de Janeiro Botanic Garden as an avenue tree. It grows to a height of 50 feet or thereabouts and has compound leaves 1½ feet in length, the individual leaflets 3 or 4 inches long, obtuse, and dark green in color. The fruits are the size of a baseball, russet brown on the exterior, thick shelled, dividing into four sections when ripe and exposing the large, brown seeds, somewhat similar in shape and appearance to chestnuts. Should be tried as an ornamental tree in southern Florida and southern California."

36716. PANAX QUINQUEFOLIUM L. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From Seoul, Chosen (Korea). Presented by Mr. George H. Scidmore, consul general. Received December 10, 1913.

36717. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

From Chosen (Korea). Presented by Mr. Alfred Welhaven, Unsan, Chosen. Received December 8, 1913.

"Peach bud wood from Pying Yang, where the best blood-red peaches grow." (*Welhaven.*)

36718 to 36810.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 23, 1913.

Quoted notes by Mr. Meyer.

36718. PRUNUS TRILOBA Lindl. **Plum.**

"(No. 1904a. Peking, China. July 23, 1913.) Collected from cultivated shrubs in the grounds of the German legation at Peking. A flowering plum much cultivated in gardens in North China in a great many varieties. The color of its flowers ranges from pale pink to a dark violet-rose, while as regards size, degrees of doubleness, profusion, difference in time of opening, and in lasting qualities, a very great variation exists."

36719. PRUNUS TRILOBA Lindl. **Plum.**

"(No. 1905a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) Collected from wild shrubs on the north slopes of mountains, at elevations of

36718 to 36810—Continued.

5,000 to 6,000 feet, where this flowering plum occurs in extensive thickets. May be of great botanical interest as the genuine wild type of a shrub which is extensively cultivated by the Chinese."

36720. PRUNUS TRILOBA Lindl. **Plum.**

"(No. 1906a. Near Shih-men, Chihli Province, China. August 3, 1913.) A large-fruited variety of flowering plum found growing in a loess cliff. Although sour and hard, it may be of value in hybridization experiments, for this wild plum seems very hardy and drought resistant."

36721. PRUNUS HUMILIS Bunge. **Plum.**

"(No. 1907a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A wild, shrubby plum, not growing higher than 1 to 3 feet. Of value as a small shrub in rockeries and possibly as a factor in hybridization experiments. Chinese name *Noo li*, meaning 'ground plum.' This same species was sent in formerly under S. P. I. Nos. 20076, 20085, 20086, 20087, 20088, and 20342."

36722. PRUNUS sp. **Plum.**

"(No. 1908a. Near Nankou, Chihli Province, China. July 28, 1913.) Collected from very low shrubs on very stony places. A wild, shrubby plum, not growing higher than 1 to 3 feet. Of value as a small shrub in rockeries and possibly as a factor in hybridization experiments. Chinese name *Noo li*, meaning 'ground plum.'"

36723. PRUNUS PADUS L. **Cherry.**

"(No. 1909a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913). A bird cherry found in the mountains at elevations of 6,000 to 9,000 feet. Of tall, shrubby growth and very fruitful. Of value as a very hardy ornamental park and garden shrub for the colder sections of the United States.

"In Siberia the people eat the little cherries after they have been dried and pounded up with the stones, kernel and all, as stuffing in little cakes, and they taste quite aromatic."

36724. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

"(No. 1910a. Kalgan, Chihli Province, China. September 5, 1913.) A small but hardy peach cultivated in sheltered localities in the northern parts of Chihli Province. To be tested in the regions north of the peach belt proper."

36725. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. **Wild peach.**
(*Prunus davidiana* Franch.)

"(No. 1911a. Peking, China. September 18, 1913.) Some exceptionally large stones selected from among No. 1892a (S. P. I. No. 36664). To be planted for seed-bearing purposes in a locality congenial for this purpose."

36726. CORYLUS sp. **Hazelnut.**

"(No. 1912a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A wild hazelnut of good quality, growing in dense thickets on the north slopes of mountains at elevations of 5,000 to 7,000 feet. The nuts grow in clusters and are surrounded individually by large, fringed involucres. Of value as a nut-bearing shrub for the cooler sections of the United States."

36727. CORYLUS sp. **Hazelnut.**

"(No. 1913a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A wild hazelnut, occurring on the mountain sides at elevations of 5,000 to 9,000 feet. The nuts grow in clusters and are inclosed individually in long, beaklike involucres, which are covered with spiny hairs that easily find lodging between

36718 to 36810—Continued.

one's fingers and cause stinging sensations. Of value as a park shrub for the cooler sections of the United States."

36728. LARIX DAHURICA Turcz. **Siberian larch.**

"(No. 1914a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A larch found at elevations of 5,000 to 10,000 feet in sheltered localities, growing up into a stately timber tree, but where exposed to winds and in the higher elevations remaining shrublike. Of value possibly as an ornamental park tree for the cooler sections of the United States. Chinese name *Tsai shu*."

36729. PICEA OBOVATA Ledeb. **Spruce.**

"(No. 1915a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) An ornamental blue spruce found on mountain slopes at elevations between 4,000 and 9,000 feet. Of value as an ornamental park and garden evergreen for the dry and cool sections of the United States. Apparently a slow grower."

36730. SORBUS sp. **Mountain ash.**

"(No. 1916a. Hsiao Wu tai shan, Chihli Province, China. August 8, 1913.) A very ornamental rowan, found on the north side of mountain slopes at elevations of 5,000 to 7,000 feet. Mostly seen in the form of a tall shrub with many branches. Bears a multitude of umbels of orange-red berries. Of value as a hardy ornamental park and garden shrub for the cooler sections of the United States."

36731. OSTRYOPSIS DAVIDIANA Decaisne.

"(No. 1917a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A spreading shrub, growing to a height of 3 to 5 feet, very much resembling the hazelnut in habit and looks. Of value as a cover plant for banks and stony places. Said to be pretty when in flower."

36732. VIBURNUM OPULUS L.

"(No. 1918a. Hsiao Wu tai shan, Chihli Province, China. August 22, 1913.) A snowball bearing brilliant carmine-red berries in autumn. Of value as an ornamental shrub for the cooler sections of the United States."

36733. ACANTHOPANAX sp.

"(No. 1919a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A spiny shrub, met with in mountain ravines at elevations of 7,000 to 9,000 feet. Of value as a park shrub for the cooler sections of the United States."

36734. ACANTHOPANAX sp.

"(No. 1920a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A spiny shrub of more slender and open growth than the preceding, No. 1919a (S. P. I. No. 36733). Met with in mountain ravines at elevations of 7,000 to 9,000 feet. Of value as a park shrub for the cooler sections of the United States."

36735. RHAMNUS sp.

"(No. 1921a. Ying tau ko, Chihli Province, China. September 12, 1913.) A Rhamnus of dense growth, having small foliage and bearing large jet-black berries. This shrub does not grow tall, but is densely branched and assumes well-rounded forms when not mutilated. Of value as a garden and park shrub and as material for medium-sized hedges, especially for the drier sections of the United States."

36736. BERBERIS AMURENSIS Rupr. (?). **Barberry.**

"(No. 1923a. Hsiao Wu tai shan, Chihli Province, China. August 20, 1913.) A barberry of tall, gaunt growth, with large but very sparse foliage. Found

36718 to 36810—Continued.

among other scrub growth on stony mountain sides at elevations of 5,000 to 6,000 feet."

36737. BERBERIS CHINENSIS Poir. **Barberry.**

"(No. 1924a. Hsiao Wu tai shan, Chihli Province, China. August 28, 1913.) A barberry of low growth, 1 to 3 feet high, found between bowlders and rocks at elevations of 4,000 to 6,000 feet. Becomes very showy toward the end of the summer, when its berries, which are produced in great abundance, assume a bright coral-red color. Of value as an ornamental low shrub for rockeries and on stony places in the cooler sections of the United States."

36738. COTONEASTER sp.

"(No. 1925a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A bush found on the north slopes of mountains at elevations of 5,000 to 6,000 feet. Of tall, expanding growth, ornamental in the fall with its multitude of soft red berries. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36739. COTONEASTER MOUPINENSIS Franch.

"(No. 1926a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A Cotoneaster growing into a tall shrub, having rather large, glossy leaves and bearing oval, blackish berries. Found on stony mountain slopes at elevations of 5,000 to 6,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36740. COTONEASTER sp.

"(No. 1927a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A Cotoneaster of medium-tall growth. Leaves oval-round, tomentose beneath; berries depressed, of dark-violet color. Rare. One specimen found on a peaty place at an elevation of over 8,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36741. CORNUS sp.

"(No. 1928a. Hsiao Wu tai shan, Chihli Province, China. August, 1913.) A shrub growing to a height of 8 feet, well branched and of expanding growth. Leaves large, slightly hirsute underneath; berries borne in masses, turning bluish black when ripe. Found at elevations of 5,000 to 6,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36742. CORNUS sp.

"(No. 1929a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A shrub growing to a height of 8 feet; well branched and of expanding growth. Leaves and fruits quite hirsute; berries borne in masses, turning bluish black when ripe. Found at elevations of 5,000 to 6,000 feet. Of value as a decorative park and garden shrub for the cooler sections of the United States."

36743. HIPPOPHAË RHAMNOIDES L. **Sea buckthorn.**

"(No. 1930a. Hsiao Wu tai shan, Chihli Province, China. August 28, 1913.) The sea buckthorn, which occurs along the seashore of northwestern Europe and throughout the higher parts of Asia. Of value as a hedge plant for the colder semiarid sections of the United States. Chinese name *Ta tzu ku chen*."

36744. SAMBUCUS RACEMOSA L. **Elder.**

"(No. 1931a. Hsiao Wu tai shan, Chihli Province, China. August 5, 1913.) An elder growing into a medium-sized bush, bearing scarlet berries; is contented with poor, rocky soils. Of value as an ornamental park shrub for the cooler sections of the United States."

36718 to 36810—Continued

36745. SAMBUCUS WILLIAMSII Hance. (?) **Elder.**

"(No. 1932a. Near Shih men, Chihli Province, China. August 2, 1913.) An elder found mostly along the roadsides, generally cut back every winter for fuel. Of value for bank-binding purposes in semiarid sections. Chinese name *Wong pa tiao.*"

36746. CARAGANA sp.

"(No. 1933a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A Caragana found growing in rocks and on dry places, reaching a height of only 2 to 3 feet. Of value as a lining shrub along pathways or for use as division lines between blocks of nursery stock. Especially fit for the colder sections of the United States."

36747. COLUTEA sp.

"(No. 1934a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A shrub of small dimensions, found in loess cliffs. Rare. Of use for bank-binding purposes in semiarid sections."

36748. LONICERA sp. **Honeysuckle.**

"(No. 1935a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A bush honeysuckle of large growth and of decidedly ornamental habit. Leaves large, dark green, against which the bright-red berries stand out beautifully. These berries are borne in pairs on long, erect peduncles. Of value as an ornamental shrub for the cooler sections of the United States."

36749. LONICERA sp. **Honeysuckle.**

"(No. 1936a. Hsiao Wu tai shan, Chihli Province, China. August 14, 1913.) A bush honeysuckle of dwarf, sturdy growth, assuming characteristic outlines when not disturbed. Leaves small, round-elliptical, of light-green color, with buttressed veins underneath near the petiole; berries comparatively large, solitary, sessile, of opaque red color. This dwarf shrub is met with at elevations of 5,000 to 9,000 feet. Of value as an ornamental shrub for the cooler sections of the United States."

36750. LONICERA sp. **Honeysuckle.**

"(No. 1937a. Hsiao Wu tai shan, Chihli Province, China. August 13, 1913.) A bush honeysuckle of tall, rather open growth. Leaves large; these and the young branches quite shiny. Berries large, oval, orange-red, inclosed in large involucres, often two together. This shrub inhabits shady places in the high mountain regions. Of value as an ornamental shrub for the cooler sections of the United States."

36751. LONICERA sp. **Honeysuckle.**

"(No. 1938a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A shrubby honeysuckle of spreading habits found on somewhat peaty soils at high elevations. The berries, of which two are grown into one, are borne on long peduncles, usually hidden by the glossy willowlike foliage. Of value as a ground cover on moist and peaty places in the colder sections of the United States."

36752. LONICERA CAERULEA L. **Honeysuckle.**

"(No. 1939a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A bush honeysuckle found on moist and peaty places at high altitudes. Bears a multitude of large dark-blue berries, which are inedible when raw. Of value as a ground cover on moist and peaty places in the colder sections of the United States."

36718 to 36810—Continued.

36753. VITIS AMURENSIS Ruprecht. **Grape.**

"(No. 1940a. Hsiao Wu tai shan, Chihli Province, China. August 26, 1913.) A very hardy grape, found at elevations of over 5,000 feet. The fruits, though small, are edible. This species may be further developed and may also be used in hybridization experiments in trying to produce hardier grapes. Possesses value as an arbor and porch cover vine. For the colder sections of the United States."

36754. AMPELOPSIS ACONITIFOLIA Bunge.

"(No. 1941a. Hsiao Wu tai shan, Chihli Province, China. August 28, 1913.) A wild vine crawling over stony places. Of value as a porch and arbor vine, especially for the drier parts of the United States. Chinese name *Pa shan ghu.* Seeds from cultivated plants were sent formerly under S. P. I. Nos. 17938 and 17939."

36755. SCHIZANDRA CHINENSIS (Turcz.) Baillon.

"(No. 1942a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A trailing vine of small growth, found between bowlders and rocks. Leaves not unlike those of *Actinidia kolomikta;* berries in small clusters, red, sour. Of use as a small porch and trellis vine for the colder sections of the United States."

Distribution.—The Provinces of Chihli, Kiangsu, and Shensi in China, and in Japan.

36756. RIBES sp. **Gooseberry.**

"(No. 1943a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A wild gooseberry found between rocks and bowlders in the mountains at altitudes of 5,000 to 7,000 feet. Very well armed, even the berries themselves being covered with large spines. Of value possibly in hybridization experiments, trying to produce mildew-resistant varieties. Chinese name *Tzu li,* meaning 'prickly pear.'"

36757. DUCHESNEA INDICA (Andrews) Focke. **Yellow strawberry.**
(*Fragaria indica* Andr.)

"(No. 1944a. Hsiao Wu tai shan, Chihli Province, China. August 13, 1913.) A wild strawberry found on the north slopes of mountains and in alpine meadows at elevations of 6,000 to 9,000 feet. Fruits fairly large, of beautiful carmine-red color, of slightly elongated shape, with the seeds deeply embedded. Of use possibly in hybridization experiments. Chinese name *Tee ren tze.* This is the first time I have seen wild strawberries in North China."

36758. RUBUS sp.

"(No. 1945a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A red-fruited, herbaceous bramble of nontrailing habits, growing only from 6 to 10 inches high, found on shaded places in the higher mountains at elevations of 7,000 to 10,000 feet. The fruits are quite large and juicy, though the seeds are too conspicuous and too bony. May be of value as a new garden fruit for the cooler parts of the United States. Chinese name *Lu tieh to.*"

36759. RUBUS sp.

"(No. 1946a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A red-fruited, low-growing herbaceous bramble, almost like the preceding number, 1945a (S. P. I. No. 36758), but with smaller fruits and less perceptible seeds, found in semishady places at altitudes of 5,000 to 7,000 feet. May be of value as a new garden fruit for the cooler parts of the United States."

36718 to 36810—Continued.

36760. INCARVILLEA SINENSIS Lam.

"(No. 1947a. Near Fangshan, Chihli Province, China. July 31, 1913.) An ornamental biennial, having large carmine-rose colored flowers arranged on long spikes. Of value as a garden plant for the drier sections of the United States. A well-drained soil, not too rich, seems to suit it best. Through selection this plant possibly might be made an annual. Chinese name *Hong la pa tsui yang hua.*"

36761. LIGULARIA sp.

"(No. 1948a. Hsiao Wu tai shan, Chihli Province, China. August 12, 1913.) A large-leaved Ligularia, growing between rocks and bowlders along running watercourses. Flowers yellow, borne in flat, divided racemes. Of value as an ornamental herbaceous perennial along water expanses in parks, especially in the cooler sections of the United States. Collected at elevations of 5,000 to 7,000 feet."

36762. LIGULARIA SIBIRICA (L.) Cass.

"(No. 1949a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A large-leaved Ligularia, found growing between rocks and bowlders along watercourses and on moist places at altitudes of 7,000 to 11,000 feet. Of value as an ornamental herbaceous perennial along water expanses in parks, especially in the cooler sections of the United States."

36763. SCUTELLARIA sp.

"(No. 1950a. Hwai lai, Chihli Province, China. July 30, 1913.) A species of skullcap bearing large racemes of deep-blue flowers. The plants love stony situations and are of dwarf growth. Of value as a rocky plant for the cooler sections of the United States."

36764. LYCHNIS CORONATA Thunberg.

"(No. 1951a. Hsiao Wu tai shan, Chihli Province, China. August 20, 1913.) A perennial Lychnis with brick-red flowers, found among scrub growth on gentle mountain slopes. Of value possibly as a showy plant for the hardy border."

36765. IRIS ENSATA Thunberg. **Iris.**

"(No. 1952a. Kalgan, Chihli Province, China. September 5, 1913.) A vigorously growing strain of *Iris ensata*, grown in gardens around Kalgan, where the leaves are used as an ever ready and handy garden tying material. Of special value for the drier sections of the United States for the above purposes and as a lining plant along paths and roads. Chinese name *Tsiao ma lien.*"

36766. ASPARAGUS DAURICUS Fisch. **Asparagus.**

"(No. 1953a. Peking, China. September 27, 1913.) An asparagus found growing wild on the city wall of Peking. Of erect growth. The young shoots are collected by the Chinese and eaten boiled as a vegetable. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions."

36767. ASPARAGUS sp. **Asparagus.**

"(No. 1954a. Fengtai, near Peking, China. September 10, 1913.) A wild erect-growing asparagus, found on a sandy bank. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions."

36768. ASPARAGUS sp. **Asparagus.**

"(No. 1955a. Near Hui yau pu, Chihli Province, China. September 2, 1913.) A wild upright-growing asparagus, found in a loess bank. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions."

36718 to 36810—Continued.

36769. ASPARAGUS TRICHOPHYLLUS FLEXUOSUS Trautv. **Asparagus.**

"(No. 1956a. Nankou, Chihli Province, China. July 28, 1913.) A wild asparagus found on a clayey ridge. Of value possibly in breeding experiments and for bank-binding purposes in semiarid regions. An ornamental garden plant, especially for the drier sections of the United States. The branches of this species of asparagus are bent in a peculiar zigzag manner."

36770. BRASSICA OLERACEA CAULO-RAPA DC. **Kohl-rabi.**

"(No. 1957a. Kalgan, Chihli Province, China. September 5, 1913.) A very large variety of kohl-rabi, weighing when fresh 16 pounds. This variety thrives especially well in the vicinity of Kalgan, where occasionally specimens are obtained weighing up to 25 pounds. The official Chinese name of this variety is *Man ching p'yi liang*, meaning 'globular kohl-rabi.'"

36771. RAPHANUS SATIVUS L. **Radish.**

"(No. 1958a. Hwai lai, Chihli Province, China. July 29, 1913.) A Chinese winter radish, said to be of good flavor. There are red and green ones among this lot of seeds. Chinese name *Tsui loba*. See former notes for uses and for cultivation (S. P. I. No. 31697)."

36772. RAPHANUS SATIVUS L. **Radish.**

"(No. 1959a. Hwai lai, Chihli Province, China. July 29, 1913.) A long, white, autumn radish, said to be of good quality. Chinese name *Pai loba*."

36773. BETA VULGARIS L. **Chard.**

"(No. 1960a. Hwai lai, Chihli Province, China. July 29, 1913.) A Chinese variety of Swiss chard, called *Tien ts'ai* or *Ching da*. The fleshy midribs are used fried in oil, either alone or with meat. Able to withstand a fair amount of alkali in the soil."

36774. CAPSICUM ANNUUM L. **Red pepper.**

"(No. 1961a. Kalgan, China. September 5, 1913.) A large, fleshy variety of chili pepper, used scalded with meats. Chinese name *Sze ssu la tze*, meaning 'persimmon pepper.' As the soil around Kalgan is quite alkaline and the climate semiarid, this and the following varieties of pepper may thrive well in those parts of the United States where similar conditions are experienced."

36775. CAPSICUM ANNUUM L. **Red pepper.**

"(No. 1962a. Kalgan, China. September 5, 1913.) A medium-large pepper, more pungent than the preceding number, 1961a (S. P. I. No. 36774), but used in similar culinary ways. Chinese name *La tze*."

36776. CAPSICUM ANNUUM L. **Red pepper.**

"(No. 1963a. Kalgan, China. September 5, 1913.) A beautiful elongated variety of chili pepper, mostly dried and kept for winter uses. Chinese name *Chang la tze*, meaning 'long pepper.'"

36777. CAPSICUM ANNUUM L. **Red pepper.**

"(No. 1964a. Kalgan, China. September 5, 1913.) A long, slender variety of chili pepper, quite pungent; used as a condiment; also dried for winter use. Chinese name *Hsien la tze*, meaning 'thread pepper.'"

36778. CUCURBITA MAXIMA Duch. **Squash.**

"(No. 1965a. Kalgan, China. September 5, 1913.) A large, ribbed winter squash of yellow color with green blotches. Chinese name *Hsi ghu lu*, meaning 'western squash.' Of value especially for the semiarid sections of the United States. Stands a fair amount of alkali."

36718 to 36810—Continued.

36779. CUCURBITA MAXIMA Duch. **Squash.**

"(No. 1966a. Hwai lai, Chihli Province, China. July 29, 1913.) An edible squash or gourd, used stewed, as a vegetable. Chinese name *Yu kua*. Of value especially for the semiarid sections of the United States."

36780. NICOTIANA RUSTICA L. **Tobacco.**

"(No. 1967a. Tie ling tze temple, Hsiao Wu tai shan, Chihli Province, China. August 25, 1913.) A coarse variety of tobacco cultivated in the temple garden, at an elevation of 5,000 feet. Chinese name *Hsiao yea yen*. For nicotine-content tests."

36781. BRASSICA PEKINENSIS (Lour.) Skeels. **Cabbage.**

"(No. 1968a. Kalgan, China. September 5, 1913.) A Chinese early winter cabbage having light-yellow heart leaves. Called *Huang ya pai ts'ai*. For cultural information, see former notes on the Chinese cabbage (S. P. I. No. 36113)."

36782. BRASSICA CHINENSIS Jusl. **Cabbage.**

"(No. 1969a. Kalgan, China. September 5, 1913.) A Chinese summer cabbage having heavy white midribs, which are cut in inch-long pieces and eaten fried, either alone or with meat, or boiled in a soup made from dried shrimps, giving all these dishes a very appetizing flavor. Chinese name *Chiang ghan pai ts'ai*."

36783. BRASSICA PEKINENSIS (Lour.) Skeels. **Cabbage.**

"(No. 1970a. Hwai lai, Chihli Province, China. July 29, 1913.) A large variety of winter cabbage, said to be of good quality. Chinese name *Tung pai ts'ai*, meaning 'winter cabbage.'"

36784. MEDICAGO RUTHENICA (L.) Trautv. **Alfalfa.**

"(No. 1971a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A wild alfalfa of spreading and semiascending growth; found in all sorts of open spaces. Flowers of dark yellowish color, pods short and flat, borne in little clusters, springing open and scattering their seeds when ripe. On very dry and exposed places the plants make but small growth, but where found in moist places and between grasses they supply quite a mass of herbage, which is eagerly eaten by all grazing animals. This alfalfa is found at elevations of 2,000 to 8,000 feet, making a much more abundant growth in the higher mountain regions than on the lower plains. Of decided value as a forage plant on ranges and grazing grounds. Might be found valuable enough even to be grown in congenial localities for hay and for green fodder. Chinese name *Ye mu shu*, meaning 'wild alfalfa.'"

36785. SOJA MAX (L.) Piper. **Soy bean.**

"(No. 1972a. Peking, China. September 29, 1913.) The original wild soy bean, which occurs in North China here and there in hedges, copses, between shrubbery, and between reeds (*Phragmites communis*) on the drier places, where it turns itself around any support available. The beans are blackish and very small and are inclosed in small pods, which are quite hairy, though looking typically like some of the smaller cultivated varieties of soy beans. The poorest of the Chinese eat the young pods when boiled, but the plant at large is considered a weed and is gathered only when large quantities are found, in which case it is fed to domestic animals as a fodder. Of value possibly as a fodder plant when sown out among erect-growing vegetation, like barnyard millet, Johnson grass, and corn. Chinese name *Mau doh*, meaning 'hairy bean.'"

36718 to 36810—Continued.

36786. VICIA sp. **Vetch.**

"(No. 1973a. Hsiao Wu tai shan, Chihli Province, China. August 23, 1913.) A vetch of tall growth, making much herbage, found among scrub. Of value possibly as a forage plant for the cooler sections of the United States."

36787. VICIA sp. **Vetch.**

"(No. 1974a. Hsiao Wu tai shan, Chihli Province, China. August 12, 1913.) A vetch of tall growth, but producing less herbage than the preceding number, 1973a (S. P. I. No. 36786); found at an elevation of 6,000 feet. Of value possibly as a forage plant for the cooler sections of the United States."

36788. GERANIUM sp. **Crane's-bill.**

"(No. 1975a. Near Pau an tchou, Chihli Province, China. September 3, 1913.) A biennial crane's-bill found here and there on the banks of ditches; produces an immense mass of herbage, which is eagerly eaten by horses, mules, and donkeys. Probably valuable enough to be grown as a forage supply, especially in the western United States, and more specifically as a winter crop in the Pacific coast region. Sow out in late summer or early fall."

36789. ERODIUM sp. **Crane's-bill.**

"(No. 1976a. Near Hui yau pu, Chihli Province, China. September 2, 1913.) Found on sandy and pebbly places, producing much herbage, especially when the nights become cool. Is eagerly browsed by all domestic animals. Apparently identical with No. 1884a (S. P. I. No. 36117). These remarks therefore apply to it also."

36790. ASTRAGALUS sp.

"(No. 1977a. Near Tan hwa, Chihli Province, China. September 2, 1913.) Found on dry loess banks; has but scanty foliage, but produces a mass of fine stems, which bear slender racemes of bluish white or white flowers. Of value possibly as a soil binder in semiarid regions, and perhaps for forage purposes."

36791. STIPA sp.

"(No. 1978a. Near Tan hwa, Chihli Province, China. September 2, 1913.) A bunch-grass found on clayey ridges. The leaves and stalks are very tough and the latter are used to make strong brooms. Might possibly be of value in the manufacturing of strong paper, and could be grown in the cooler parts of the semiarid belt in the United States. Chinese name *Tchi tchi*."

36792. AGROPYRON sp.

"(No. 1979a. Hsiao Wu tai shan, Chihli Province, China. August 27, 1913.) A vigorously growing grass, found in shaded places at altitudes of 5,000 to 8,000 feet. Of use possibly for grazing purposes."

36793. ELYMUS DAHURICUS Turcz.

"(No. 1980a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A tall grass with heavy, erect stems, found on fertile flats in the mountains at elevations of 7,000 to 9,000 feet. Of use possibly for grazing purposes."

36794. ELYMUS SIBIRICUS L.

"(No. 1981a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A tall grass with heavy, overhanging heads, found in great masses on fertile flats in the higher mountain regions at altitudes of 6,000 to 9,000 feet. Of value possibly for grazing purposes."

36718 to 36810—Continued.

36795. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 1982a. Near San kia tien, Chihli Province, China. September 11, 1913.) A tall-growing white-seeded variety of sorghum, often producing several heads as side shoots. Its productivity, however, is not as great as the varieties that bear only one panicle."

36796. CHAETOCHLOA ITALICA (L.) Scribner. **Millet.**
(*Setaria italica* Beauv.)

"(No. 1983a. Kalgan, China. September 5, 1913.) A prolific variety of bird millet grown on the somewhat alkaline soils around Kalgan. Chinese name *San pien huang goo tze*, meaning 'thrice-changing yellow small millet.'"

36797. ARTEMISIA sp. **Wormwood.**

"(No. 1984a. Peking, China. October 18, 1913.) A biennial wormwood, occurring as a weed in all sorts of dry waste places. The Chinese utilize this plant as a stock to graft chrysanthemums upon and claim that the chrysanthemums thus grafted are earlier, need less water and no manure, are more easily lifted and transplanted, and in general require far less care than when on their own roots. To obtain the best results, the Chinese sow the seed in late summer in well-drained beds. The seeds germinate quickly, but the plants make very little growth during the autumn and winter. When spring comes, however, they develop with great vigor, and in June they have well-formed stems. The Chinese then cut off the main stem an inch or so from the ground and graft a chrysanthemum scion upon it by the ordinary cleft-graft method. No wax is used, but only a small strip of fiber, while the plants are shaded during the first days. The stock and the scion soon unite and continue to grow vigorously. On very strongly developed specimens of the stock the main branches are often used to insert on every one a different variety of chrysanthemum or to train a beautiful 'standard' tree of it, and some of such specimens are fully as good as the plants seen at home exhibitions of chrysanthemums. This previously described method of grafting chrysanthemums might prove to be valuable for the sections of the United States where the summers are somewhat too short or the nights too cool to rear the plants successfully out of doors, like, for instance, the more elevated parts of the Rocky Mountain States.

"Care has to be taken to water the plants sparingly when lifted and planted in flower pots. The Chinese name of this Artemisia is *Ghau tze*."

36798. THLADIANTHA DUBIA Bunge.

"(No. 1985a. Peking, China. October 7, 1913.) An ornamental perennial cucurbit, with scarlet fruits the size of small hens' eggs. Chinese name *Tze kua*."

36799. SCHIZONOTUS SORBIFOLIUS (L.) Lindl.
(*Spiraea sorbifolia* L.)

"(No. 1986a. Peking, China. October 11, 1913.) A variety of the ordinary sorbus-leaved spiræa, which grows well in Peking, thriving even in well-trampled inner courtyards, where soil conditions certainly are unfavorable to plant growth. Remains in flower, more or less, from the end of June until the end of September. Of value especially as an attractive shrub for back yards in our cities and as a garden shrub for semiarid sections of the United States. Sow out on peaty soil and keep in a shady place."

36718 to 36810—Continued.

36800. NITRARIA SCHOBERI L.

"(No. 1987a. Near Tientsin, China. July 16, 1913.) A densely branching hardy shrub of spreading habits. Has small bluish green leaves and bears small berries, which change from light green through red into a violet black. Found growing on strongly alkaline flats. Of value possibly as a soil and sand reclaimer for alkali regions. Collected and presented by Mrs. Mary Clemens, wife of the Rev. Joseph Clemens, chaplain to the 15th Regiment, United States Infantry, at Tientsin, China. Received on October 19, 1913."

36801. CRATAEGUS PINNATIFIDA Bunge. **Hawthorn.**

"(No. 1988a. Peking, China. October 8, 1913.) A large-fruited variety of Chinese edible haw; for selection and for stocks. See previous introduction, No. 1841a (S. P. I. No. 35641)."

36802. PYRUS sp. **Pear.**

"(No. 1989a. Peking, China. October 8, 1913.) A very small pear of russet color, with a long peduncle. Becomes quite soft and mushy after having been kept in a room for a couple of weeks; quite different from the small variety of *Pyrus sinensis*, which remains hard and shriveled up. Obtained at a fruit stand in Peking; probably collected from wild trees."

36803. MALUS sp. **Crab apple.**

"(No. 1990a. Peking, China. October 8, 1913.) A Chinese crab apple, the size of a large cherry, of dark-purple color; of fine flavor when made into a compote. Apparently very hardy and of value for the semiarid sections of the United States when grafted on the Siberian *Malus baccata*, which is very drought resistant. Chinese name *Ghae tang kuo*."

36804. PRUNUS SALICINA Lindl. **Plum.**

"(No. 1991a. Kalgan, China. September 8, 1913.) A variety of plum of wine-red color and said to be as large as an apple, coming from Yu tchan, western Chihli Province, China. Obtained from its collector, Mr. Rusted, of the British American Tobacco Co., at Kalgan. Of value possibly for the cooler sections of the United States."

36805. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

"(No. 1992a. Peking, China. October 15, 1913.) A peculiar pointed variety of winter peach of white color. Flesh hard, but sweet; skin covered with a dense, felty down, which can be scraped off and looks like short wool."

36806. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

"(No. 1993a. Kalgan, China. September 8, 1913.) A very large variety of clingstone peach, coming late in the season; of good quality, though not very sweet. Probably imported from Shantung Province."

36807. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. **Wild peach.**
(*Prunus davidiana* Franch.)

"(No. 1994a. Peking, China. October 23, 1913.) A variety of the *davidiana* peach, of fastigiate growth, trees becoming 50 to 60 feet high. Of value as an appropriate tree for cemeteries and other places where some dignity of outline is required. Suitable especially for the drier sections of the United States. As pyramidal trees in general do not come true from seed, only a small percentage of the trees from these seeds may be expected to be of a correct columnar shape, while the bigger part will be all sorts of intermediate types."

36718 to 36810—Continued.

36808. DIOSPYROS LOTUS L. **Persimmon.**

"(No. 1995a. Peking, China. October 22 to 29, 1913.) Twenty thousand seeds of the wild persimmon from North China; to be used as stocks for cultivated varieties of persimmons, especially for the drier parts of the United States."

36809. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

"(No. 1996a. Peking, China. October 30, 1913.) A rare, brown and black striped variety of soy bean, used roasted as a delicacy. Very wholesome, apparently, and worthy of trial by the American public. Could be slightly salted and buttered and sold like pop corn and peanuts. Chinese name of this bean *Ghu pee doh*, meaning 'tiger-skin bean.'"

36810. ALBIZZIA JULIBRISSIN Durazz. **Silk tree.**

"(No. 1997a. Peking, China. October 24, 1913.) The so-called silk tree, a beautiful little tree with feathery foliage and delicate rosy flowers, which are borne in large masses. Withstands drought, dry heat, and a fair amount of alkali quite successfully, and thrives to perfection in the rather uncongenial climate of North China. Of value as an ornamental garden and park tree, especially for the sections of the United States where the summers are dry and hot and the winters not too severe. Produces an especially fine effect when planted in a row or in a scattered group in some prominent place. Can also be used as a shade-giving tree on tea plantations, as is being done at Chakva, near Batoum, in the Caucasus, where by this method the picking season is considerably extended. This North China form may possibly be hardier than the types at present cultivated in America, as suggested by Prof. Sargent, director of the Arnold Arboretum."

36811 to 36813.

From the Sudan. Presented by Gov. H. W. Jackson, of Merowe, Dongola Province, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received December 9, 1913.

Quoted notes by Prof. Mason.

36811 and 36812. ALLIUM CEPA L. **Onion.**

"From northern Amalad, Amer Island, near the fourth cataract of the Nile. Taken from the ground in May and early June (our Sacaton and Texas dates of harvest), they are now (September 21) about as hard as baseballs. They are not mild flavored by any means, and an onion with such keeping qualities in this intense heat is surely a find. These people sow the seed in beds in October or November, and transplant to the growing beds in February. I think the Imperial Valley, Yuma, and Indio would be the correct places to try out this seed."

36811. "Dongola onion, red." **36812.** "Dongola onion, white."

"There are three quite distinct types, but a round one with a pure white color and of medium size is regarded as the best."

36813. DODONAEA VISCOSA (L.) Jacq.

"Seed of a plant received from the gardens of the governor at Merowe. A very interesting hedge plant, which is beautifully dense and green, responds to the shears perfectly, and when taken in hand early makes a perfectly compact wall clear to the ground. This shrub was found at Erkowit, near Suakin, in the hill country of the Sudan, under conditions which suggested that it might be native there, but its presence was probably due to some remote importation,

36811 to 36813—Continued.

as this species is pretty generally distributed throughout the tropical world. The shrub is called *tattas* by the natives. The governor is not sure whether it will endure any degree of frost, but thinks it may. The seedling plants form a rather deep taproot and must be transplanted with some care on that account. This is one of the most perfect tropical hedge plants I have ever seen."

36814. ARTEMISIA MARITIMA L. **Wormseed.**

From Russia. Presented by Mr. John H. Grout, American consul at Odessa. Received November 29, 1913.

"In only one part of the country (Tashkend) was I able to secure the seed, and there it was in the hands of one firm. This firm has a small plantation a long distance away, where the seed is raised in small quantities.

"Russian pharmacists obtain their supplies of the flower buds from central Asia, where on some of the dry hillsides the plants grow in great profusion and without any sort of cultivation. There it is richest in the volatile oil and in santonin, for which it is valued. The same variety of plant is also found in parts of Persia and Asia Minor and, I believe, also in places in Hungary. It seems to thrive best in semiarid climates with a superabundance of sunshine and a certain brackishness of soil. It would doubtless grow well in some parts of the southwestern portion of the United States on calcareous loess and on the outskirts of salt marshes. Whether a plant which grows wild in other places and only needs to be collected could be grown with great profit in the United States may be open to doubt." (*Grout, extracts from letters dated April 14 and November 8, 1913.*)

"*Artemisia maritima* L., is a very variable species, and two varieties which are known as *A. cina* Berg and Schmidt, and *A. pauciflora* Weber are usually regarded as the source of the so-called Levant wormseed, or santonica, of the Pharmacopœia. The commercial supply of santonica comes largely from Turkestan, but the harvests of three successive years, 1909 to 1911, proving a failure, considerable interest has been aroused in the possibility of producing this drug in other countries." (*W. W. Stockberger.*)

36815 to 36817.

From American Samoa. Presented by Commander C. D. Stearns, Governor of Samoa. Received December 10, 1913.

36815. MANGIFERA INDICA L. **Mango.**

"Mango seeds taken from fruits grown in these islands." (*Stearns.*)

36816. DIOSCOREA sp.

Tuber.

36817. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

"Seeds taken from fruits grown in these islands." (*Stearns.*)

36818 to 36828. PHOENIX DACTYLIFERA L. **Date.**

From Dongola, Sudan, Africa. Offshoots collected by Prof. S. C. Mason, of the Bureau of Plant Industry. Received December 17, 1913.

Quoted notes by Prof. Mason.

"It is generally acknowledged that the four date varieties of importance in this Province were originally brought up the river from the Sukkot district, a very inaccessible region between the second and third cataracts of the Nile, now included, for administrative purposes, in Halfa Province, with the capital at Wadi Halfa. John Lewis Burkhardt, in his account of his travels in Nubia in 1813, mentions the excel-

lence of the dates of Sukkot and says that the merchants of Merowe brought commodities in exchange for them, their own country having but few dates and those of bad quality. Dongola Province is now the great date-producing region, and the people are alive to the value of the offshoots and are planting every one they can get, offering none for sale. The great source of supply is the Sukkot country, already mentioned, where the industry has declined from the going out of the young men and on account of the difficulties of transportation. The three important varieties recognized in both districts are *Barakawi*, *Gondeila*, and *Bentamoda*."

36818. "*Bentamoda*. No. 1. The find which is worth the whole journey is the *Bentamoda*, a Sukkot variety which is very rare. A man of consequence may have two or three trees. The gift of an offshoot to a friend is a mark of distinction. I was at once told by both Governor Jackson and his head gardener that one could not by any means go out and buy a stock of these. I really think the *Bentamoda* variety ranks with the *Deglet Noor* and *Menakher*. The stone is small and clean, and the fruit has the appearance and flavor to give it a place in the first rank. It was learned from the Omda of Aswan that the *Bartamoda*, or *Sukkota*, of which a few trees may be found near Aswan, is identical with this variety, the first name being a modification of *Bentamoda* and the second given in reference to the district from which the offshoots were obtained. Aaronsohn secured a few offshoots under the name 'Bartamoda' in 1911."

36819. "*Bentamoda*. No. 2."

36820. "*Bentamoda*. No. 3."

36821. "*Bentamoda*. No. 4."

36822. "*Bentamoda*. No. 5."

36823. "*Bentamoda*. No. 6."

36824. "*Bentamoda*. No. 7."

36825. "*Bentamoda*. No. 13."

36826. "*Barakawi* is the great food staple and export date and is said to reach Cairo under the name *Ibrimu*, though there may be a distinct variety of this name. It is 2½ inches long or longer, narrow, tapering from base to apex; dull purplish red; it dries bone hard, but is sweet and of a wheaty flavor; said to resist the weevil and to keep two or three years. The people say that these dates put in a tightly closed vessel of water a day or two become as good as fresh dates and that the water makes a very pleasant drink. Governor Jackson informs me that this date is much sought as a food supply by pilgrims journeying to Mecca, on account of its excellent carrying and keeping qualities."

36827. "The *Gondeila* (as these people have it), or *Jendila*, is an oblong or oval, blocky date, antimony yellow (Ridgway, xv), ripening to a chestnut brown. It is a semidry date as it ripens, but exposed to the sun for two hours each day it is made quite dry. It must, however, be carefully guarded against weevils. It reaches Cairo only on special orders or as presents. It is one of the varieties offered to guests as a sweet. When sold, an ardeb of 320 pounds brings here about 154 piasters (a piaster is about 5 cents). This variety is worth importing and is common enough, so that a fair supply can probably be obtained."

36828. "*Kulma*. A very soft, sticky date when first mature, but becomes firmer when cured in the sun. The fruit is 2¼ to 2⅜ inches long and 1¼ to 1⅜ inches broad; dull yellow, ripening to a rather dull, unattractive brown. The skin is a bit thick and the flesh soft and rich, but with a lot of tough rag. It is a date worth trial, but not equal to the *Bentamoda*, though reminding one in a way of the *Tafilelt*. The people explained that this variety should never be planted on land near a river bank, but well inland, in a dry situation. Then the fruit cures without spoiling."

For full notes on these date varieties, see "Dates of Egypt and the Sudan," by S. C. Mason, Bulletin No. 271, U. S. Department of Agriculture, 1915.

36829 to 36840.

From Pying Yang, Chosen (Korea). Presented by Mr. Charles L. Phillips, Presbyterian Mission. Received December 10, 1913

Quoted notes by Mr. Phillips.

36829 to 36837. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

"The soy bean in Korea is usually sown in the fields with millet. In the early spring, after the millet has reached the height of 2 or 3 inches, the beans are dropped in between the hills of the grain, all of which is sown in rows and cultivated with the Korean ox plow. Beans of this kind produce best in heavy clay soil rather than in light, stony ground. These beans serve as food for man and beast and are used most extensively throughout this whole northern country. For man, bread and cake are baked with these beans, a sloppy cereal dish is cooked, and, of course, everywhere soy is made. Especially with the yellow varieties, bean sprouts are grown during the winter, which furnish a fresh vegetable dish for the people at a time when green things are scarce. The beans are put in an earthen dish and daily sprinkled with water and kept in the warm living room of the house, where they are quickly sprouted and send long shoots out from the dish. These sprouts are a great relish. They are boiled and eaten with rice and millet. For fodder, the beans are fed in the pod to the cattle and horses, but in cold weather are most often boiled and fed as a hot mash."

36829. "No. 1. Yellow. This is the most common of all soy beans in Korea."

36830. "No. 2. Small yellow." **36831.** "No. 3. Black."

36832. "No. 4. Green. These beans are also roasted and popped like our pop corn or like roasted chestnuts. A great favorite among the Korean children."

36833. "No. 5. Brown. Rarely grown in northern Korea."

36834. "No. 6. Brown and black."

36835. "No. 7. Black and yellow."

36836. "No. 8. Mottled green and black."

36837. "No. 9. Black with white spots. Called sometimes in this province 'widowers' beans.'"

36838 to 36840. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

36838. "Gray mottled. Long pods, with seven or eight beans in one pod. Used extensively in northern Korea. Boiled and eaten as a cereal. Planted with millet; yields best in heavy loamy soil."

36839. "Yellow. Long pods, with seven or eight beans in one pod. Used extensively in northern Korea. Boiled and eaten as a cereal. Planted with millet; yields best in heavy, loamy soil."

36840. "Red. Soap is made from this variety."

36841 to 36845.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 18, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36841. MANGIFERA INDICA L. **Mango.**

"(No. 26. November 20, 1913.) Bud wood of the variety called *Manga da Rosa*, or *Rose mango*, from the orchard of Dr. Miguel de Teive e Argollo, at Roma, on the outskirts of Bahia.

"*Manga da Rosa* is one of the commonest named varieties of the mango, both here and at Rio de Janeiro. The name seems to be applied to seedling trees in many cases. On investigation we find that the seed is polyembryonic, which leads to the belief that the variety may in reality be a seedling race or type, like the No. 11 of the West Indies and Florida, and like this race maintain its characteristics, even when grown from seed.

"The fruits of this variety are of good size and ripen here in December and January. At the present time they are almost full grown. The form is somewhat similar to that of the No. 11 mango, broad at the base, with the stem inserted to one side, making the left shoulder full and high, while the right shoulder is falling. The apex is rather pointed, with a rather prominent beak about one-half inch above the longitudinal center of the fruit. Both cheeks are distinctly compressed and are overspread with rich rose-red, a very attractive and striking color. The seed is medium in size and those we have examined contained from five to eight embryos. The flavor and quality are said to be very good, and the trees seem to be carrying better crops of fruit than in the case of other varieties. This mango should be given a thorough trial in Florida, both to determine its value as a fruit and to throw more light on the fruiting habits of the polyembryonic mangos, which seem to be an especially promising class."

See S. P. I. No. 36688 for a previous introduction and Plate IV for an illustration of the fruit of this mango.

36842. BAUHINIA sp.

"(No. 22a. November 9, 1913.) Seeds collected from a tree growing on the Rua Victoria, near No. 61. This small tree, 18 to 20 feet high, bears very pretty light-pink flowers and long, brownish pods. It is seen quite often in the yards here in the city. It is possible that this species is already in the United States. It should be propagated and tried, as it might prove quite distinct."

36843. OPERCULINA TUBEROSA (L.) Meissn.

"(No. 23a. November 9, 1913.) Seeds of a supposed Ipomoea. An old gate and posts near 71 Rua Victoria are covered with a strong-growing woody vine that has been almost completely killed, on account of street-improvement work. The seed pods, which are very large and characteristic of those of our morning-glories, contain from one to four, rarely five, large velvety black seeds. A leaf of which we made a rough pencil sketch is 7 lobed. We were unable to find a flower. For propagation and test in California and Florida."

36844. CARICA PAPAYA L. **Papaya.**

"(No. 25a. November 12, 1913.) Seeds of an interesting variety of the *mamão*, or papaya, obtained in the market at Bahia. The fruit is oblate in form, 4 inches long, and 5 inches wide. It would be an ideal size for shipping. The quality is good, but the seed cavity is rather large. Should be tried in southern Florida."

36841 to 36845—Continued.

36845. CUCUMIS MELO L. **Muskmelon.**

"(No. 26a. November 12, 1913.) Seeds of a large melon grown at Joazeiro, on the Sao Francisco River, 250 miles inland from Bahia. This melon is 10 inches long and 5 inches in diameter, straw colored, and heavily ribbed. The flesh is light salmon color, with a pronounced musky flavor; of fair quality. It might prove of value in parts of the arid Southwest."

36846 to 36848. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

From Dalny, Manchuria. Presented by Mr. Albert W. Pontius, American consul. Received December 10, 1913.

"A large variety of beans is grown in Manchuria, and together with their resultants, bean cake and bean oil, they constitute by far the most valuable item in the export trade of the three provinces. In the month of April they are sown by hand in drills and the crop is ripe in September; but as regards the beans of commerce there is an exception, namely, the small green bean known as *Lu tou* (*Phaseolus aureus* Roxb.), which ripens as early as July and can be sown again in that month and gathered early in October. The Chinese distinguish the beans of commerce by their colors. At the end of March or beginning of April the ground fertilizer (night soil and animal manure) is spread over the fields in the furrows in which the previous season's beans were cultivated. The soil in the old ridges is then turned with the ordinary shallow native plow, the new ridges being formed where the fertilizer has been spread. The ground is broken with a wooden roller drawn by a mule, the tops of the ridges being partly leveled. A line marker is then used on the leveled ridges, this implement marking a shallow trench, preparing the ground for seeding purposes.

"The planting of beans in Manchuria takes place during the month of April. The seeding is effected in two manners, the beans being sown in light furrows or in finger holes placed uniformly apart. The former method is quite simple and requires no explanation; in the use of the latter method, the finger holes are about 9 inches apart, four or five seeds being dropped in each hole. The amount of seed used differs in the various districts, a higher altitude requiring a proportionately larger quantity of seed. The following shows the different quantities of seed used in the varying latitudinal districts of Manchuria: Liaotung Peninsula (district south of Tashihchiao), from thirty to forty-five hundredths of a bushel per acre; Mukden, Tiehling, and Kaiyuan, from forty-five to sixty hundredths of a bushel per acre; Kirin, from sixty-five to eighty hundredths of a bushel per acre; Heilungchiang, eighty hundredths of a bushel or more per acre. The first breaking and weeding of the soil takes place from six to ten days after seeding and when the sprouts are from 3 to 4 inches in length. Weeding is subsequently effected during intervals of four or five days (every ten days in northern Manchuria). Native hoes and rakes are used for weeding, the ground being broken with a wooden plow drawn by a horse or mule. The period of harvesting is from the latter part of September to the beginning of October, the bean plants being cut close to the roots, a stone roller or wooden flail being used in hulling. The average crops per acre by districts are estimated as follows: In southeast Manchuria and the coast of the Yellow Sea the yield is from 10 to 15 bushels per acre; in the Liao River valley, Changtu, Kaiyua, Tiehling, and Mukden the yield is from 40 to 50 bushels per acre; at Kirin the yield is from 24 to 26 bushels per acre; and in Heilungchiang (Amur district) the yield is from 17 to 22 bushels per acre." (*Pontius.*)

36846. "Yellow bean. *Pai mei*, 'white eyebrow,' from the white scar on the saddle, or point of attachment to the pod. This variety is highly prized for the quantity of oil or fat which it contains. Shipped from Fanchiatun station, near Changchun, south Manchuria." (*Pontius.*)

36846 to 36848—Continued.

36847. "Yellow bean. *Hei chi*, 'black belly,' from the dark-brown scar on the saddle. This variety is highly prized for the quality of oil or fat which it contains. Shipped from Kinchou station, leased territory." (*Pontius.*)

36848. "Green bean. *Ching tou.* This variety is said to yield more legumin in the manufacture of bean curd than the yellow bean, but the quality is inferior. It is also boiled and used as food." (*Pontius.*)

36849 and 36850. LINUM USITATISSIMUM L. **Flax.**

From Smyrna, Asia Minor. Presented by Mr. John W. Dye, American vice consul general. Received December 13, 1913.

36849. "The annual production of flaxseed in the Province of Smyrna is estimated at 280,000 to 300,000 pounds, the greater part of which is exported to France, Germany, and Italy. The price averages about 4 to 5 cents per pound." (*Dye.*)

36850. "A small sample of a grade of flaxseed grown on the island of Crete which appears on this market and is held at the same price as that from Asia Minor." (*Dye.*)

36851. LINUM USITATISSIMUM L. **Flax.**

From Pskoff, Russia. Presented by Malcolm & Co. Received December 16, 1913.

36852 to 36861.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 17, 1913.

Quoted notes by Mr. Meyer.

36852 to 36854. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertner.)

36852. "(No. 1041. Peking, China. November 7, 1913.) A variety of jujube with large, round-oblong fruits of a dark mahogany-brown color; meat somewhat juicy and quite sweet. Trees of rather small growth and quite spiny. Cultivated in Peking gardens under the name *Ta tsao*, meaning 'big jujube.'"

36853. "(No. 1042. Peking, China. November 8, 1913.) A variety of jujube bearing rather small fruits of roundish shape and of a red-brown color; meat very sweet. Trees grow to be large, with heavy trunks and few spines. Produces more fruit when ringed annually. Cultivated in Peking gardens under the name *Hsiao tsao*, meaning 'small jujube.'"

36854. "(No. 1043. Peking, China. November 9, 1913.) A jujube bearing large fruits of elongated shape, tapering toward the end; color a rich reddish brown. Of sweet taste; meat firm; of rather good keeping qualities. Trees of tall growth with few branches; foliage very large. Cultivated in Peking gardens under the name *Yu tsao*, meaning 'tooth jujube,' on account of the tapering shape of the fruits."

36855. VIBURNUM PLICATUM Thunberg.

"(No. 1998a. Hsiao Wu tai shan, Chihli Province, China. August 30, 1913.) A shrub of medium dimensions, found on stony mountain slopes. Bears in early summer many umbels of whitish flowers, followed by berries which change from green to red and when ripe to black. The foliage is quite green and dense, the leaves somewhat undulated. Of value as a hardy ornamental drought-resisting shrub for the colder regions of the United States."

36852 to 36861—Continued.

36856. RIBES sp. **Currant.**

"(No. 1999a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A currant of tall, open growth found on northern mountain slopes at elevations of 7,000 to 10,000 feet. Berries red, small, sour, and not juicy."

36857 to 36859. ROSA sp. **Rose.**

36857. "(No. 2000a. Hsiao Wu tai shan, Chihli Province, China. August 24, 1913.) A very tall and vigorously growing wild rose, found among tall scrub on mountain slopes. Of value as a stock for cultivated roses for the colder sections of the United States."

36858. "(No. 2001a. Hsiao Wu tai shan, Chihli Province, China. August 21, 1913.) A wild rose of low, bushy growth found on stony mountain sides. Of use possibly for stony and pebbly places in wild gardens."

36859. "(No. 2002a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A wild rose of low growth and spreading habit, each stalk standing separately; found in semishady places at elevations of 7,000 to 10,000 feet. Of use possibly beneath trees as an open ground cover, especially for the colder sections of the United States."

36860. HEMEROCALLIS sp. **Day lily.**

"(No. 2003a. Hsiao Wu tai shan, Chihli Province, China. August 29, 1913.) A low-growing liliaceous plant with linear leaves, found on open, rocky places at altitudes of 5,000 to 7,000 feet. Of value possibly as a hardy perennial for the colder sections of the United States.

36861. PHASEOLUS VULGARIS L. **Bean.**

"(No. 2004a. Hsiao Wu tai shan, Chihli Province, China. August 30, 1913.) A good variety of garden bean cultivated in a temple garden at an elevation of 5,000 feet. Of value apparently as a garden vegetable for the cooler sections of the United States."

36862 and 36863. CUCUMIS MELO L. Muskmelon.

From Spalato, Dalmatia, Austria-Hungary. Presented by Mr. William T. Forbes, Worcester, Mass. Received December 6, 1913.

36862. "Seeds of a muskmelon served at the Grand Bellevue Hotel. Melons nearly spherical, 9 inches in diameter; flesh 3 inches thick and seed opening 3 inches. Sweet; flesh green; tastes like pineapple." (*Forbes.*)

36863. "Seeds of a muskmelon served at the Grand Bellevue Hotel. Melons 9 inches in diameter; very sweet; green flesh; pineapple taste; very fine." (*Forbes.*)

36864. BELLUCIA sp. Papaturro.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture, San Jose. Received December 9, 1913.

"A small tree, with fruit which to my taste is one of the best; flowers large and beautiful; very fragrant; for hot climates, deep, fresh alluvial land; grows principally on the banks of creeks." (*Wercklé.*)

36865. JUGLANS CINEREA × REGIA. Walnut.

From Jamaica Plain, Mass. Presented by Mr. John G. Jack, East Walpole, Mass. Received December 22, 1913.

"From the Eben Bacon estate, Prince Street, Jamaica Plain, Mass. A large tree with the aspect of a butternut (*J. cinerea*) but closer, less deeply furrowed bark. Leaves of few large leaflets. Nuts much like *J. cinerea*, but shell less sharply rough and husk not glandular pubescent. Trunk about 4 feet in diameter at 2 feet from ground, at 4 feet from ground dividing into three large limbs." (*Jack.*)

"A large widespreading specimen with a trunk diameter of 4 feet 3 inches about 2 feet above the surface of the ground and just below the point where it divides into three large limbs, standing in the grounds of Mr. Eben Bacon, of Jamaica Plain. This tree is supposed to have been planted between 50 and 60 years ago." (*Garden and Forest, No. 349, October 31, 1894.*)

36866 to 36887.

From Pango Pango, Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received December 10, 1913.

36866. ADENANTHERA PAVONINA L. **Coral bean tree.**

"A handsome deciduous tree with spreading branches and bipinnate leaves bearing pods of glossy, scarlet, biconvex seeds. Pinnæ two to six pairs; leaflets 6 to 12 pairs, oval, obtuse, glabrous; flowers in racemes, numerous, small, white and yellow mixed, fragrant; calyx 4 to 5 toothed; stamens 8 to 10; pods linear, somewhat curved, bivalved, 10 to 12 seeded.

"The tree is a native of the East Indies, where the jewelers use the seeds for weights, each weighing almost exactly 4 grains. The heartwood of the larger trees is of a deep-red color. It is hard and durable and in India is sometimes used as a substitute for red sandalwood. It yields a dye which the Brahmins of India use for marking their foreheads. It has long been growing in Guam, and is pretty well distributed over the island. Its vernacular name, *kolales*, is an imitation of 'corales' (coral beads), and is likewise applied to the smaller seeded *Abrus abrus*." (*W. E. Safford, Useful Plants of Guam.*)

36867. BARRINGTONIA ASIATICA (L.) Kurz. **Fütú.**

"*Fütu.* A moderate-sized tree; cuts light but grows brown by exposure. The wood is curly, brittle, and soft; it is quite light and is used for canoes; it is not a valuable wood for general use, though much esteemed by the natives on account of the ease with which it is worked. The fruit is reduced to powder and used to stupefy fish in a method of fishing called *Seu*. The leaves are large and lustrous, like magnolia foliage, and the flowers are very beautiful." (*Stearns.*)

36868. BARRINGTONIA SAMOENSIS A. Gray.

"*Falaga.*"

Distribution.—A tree whose protruding red-stamened flowers are borne in racemes 2 feet long. Found in Samoa and on the adjacent islands.

36869. BIXA ORELLANA L. **Annatto tree.**

"*Loa.* A small tree, bearing prickly capsules containing seeds surrounded by red pulp, which yields the well-known annatto of commerce. Leaves cordate-ovate, acuminate entire or angular, smooth on both surfaces.

"Annatto is prepared by macerating the pods in boiling water, removing the seeds, and leaving the pulp to settle. The water is then poured off, and the residuum, which is of a bright-yellow or orange color, is used as a dyestuff. In Guam it is sometimes put in soup and rice. The Caroline Islanders use it to paint their bodies, together with turmeric. It is sometimes used in the same way by the Samoans.

"The chief uses to which annatto is applied are for dyeing silk and cotton orange yellow and for coloring cheese and butter. The color imparted to fabrics, however, is not lasting." (*W. E. Safford, Useful Plants of Guam.*)

36866 to 36887—Continued.

36870. CANAVALI sp.

"*Fue-lopa.*"

36871. CLERODENDRUM AMICORUM Seem.

"*Mamalupe.*"

Distribution.—A white-flowered shrub, often 15 feet tall, found in Samoa and on the adjacent islands.

36872. CRASSINA ELEGANS (Jacq.) Kuntze.
(*Zinnia elegans* Jacq.)

"*Makerika.*"

36873. DIOSCOREA sp. **Yam.**

"*Soi*, a species of yam."

36874. GYNOPOGON BRACTEOLOSA (Rich.) Schumann.
(*Alyxia bracteolosa* Rich.)

"*Nau*, or *Laumaile.*"

36875. INDIGOFERA sp.

"*Fue.* This is one of the many varieties of creeping plants. This one in particular is a kind of shrub." (*Stearns.*)

36876. LEUCAENA GLAUCA (L.) Benth.

"*Lopa.* Another of the lopa species." (*Stearns.*)

36877. MABA ELLIPTICA Forster. **Maba.**

"A shrub of 6 feet or more, or a moderate-sized tree, or sometimes a lofty tree; branches slender, cinereous, terete, rather rough; shoots hairy, glabrescent; leaves elliptical or oblong-lanceolate, obtuse at the apex, cuneate at base, glabrescent, subcoriaceous, 1½ to 4½ inches long by three-fourths to 1⅝ inches wide. Petioles one-tenth to one-fifth inch long. The fruit is fleshy, pedunculate, crowded, greenish, ellipsoidal, scarcely 1 inch long by one-half inch thick, pubescent or nearly glabrous, two or three celled; seeds triquetrous. This plant is called *Maba* by the natives in the Friendly Islands, and *Kiharùpat* in Java, and *Anúme* in the Navigator's Islands. It is eaten by the children and flowers in June or July and in January or February. When young, it is difficult to distinguish from *M. rufa*, and approaches also in appearance *M. buxifolia.*" (*Hiern, Monograph of Ebenaceæ, in Transactions of the Cambridge Philosophical Society, vol. 12, pt. 1, p. 122, 1873.*)

36878 and 36879. MEIBOMIA UMBELLATA (L.) Kuntze. **Bush tick trefoil.**
(*Desmodium umbellatum* DC.)

"*Lala.* A shrub 1 to 2 meters high, growing on the sea beach, with densely downy young branches, 3-foliate leaves, and axillary umbels of whitish papilionaceous flowers. Branches terete; petioles 2.5 cm. or less long, slightly furrowed; leaflets subcoriaceous with raised costate veins, green and glabrous above, thinly gray-canescent or nearly glabrescent beneath, end leaflet larger than side ones, roundish, or broad-oblong, 5 to 7.5 cm. long; umbels 6 to 12 flowered; pedicels short, unequal; calyx 4 mm. long, densely silky, 4-parted, 2-bracted; bracts minute, deciduous; standard of corolla obovate, keel blunt; stamens monadelphous; pod jointed, 3.5 to 5 cm. long, the joints 3 to 5, thick, glabrescent or silky, indented at both sutures.

"A strand shrub of wide tropical distribution. Common near the beach in Guam, Samoa, Fiji, and the Malay Archipelago. In Samoa it is used for perches for pet fruit pigeons. The Guam name means 'lizard's bush.'" (*W. E. Safford, Useful Plants of Guam.*)

36866 to 36887—Continued.

36880. MORINDA CITRIFOLIA L. **Nona.**

"This plant, called *ladda* or *lada* by the natives of Guam, has seeds of unusual interest. Their buoyancy is insured by a distinct air cell. They are frequently found in the drift of tropical shores, and experiments have been made which demonstrate the great length of time they will float in salt water." (*W. E. Safford, Useful Plants of Guam.*)

Distribution.—A small tree, cultivated as well as wild, in the warmer parts of India and in Ceylon; also found on the islands eastward to Australia.

36881. MYRISTICA INUTILIS Rich. **Nutmeg.**

"*Atone;* a tree." (*Stearns.*)

36882. PARINARI LAURINUM A. Gray. **Ifi-ifi.**

"*Ifi-ifi.* A large tree which bears a round, very hard fruit; it is used by the natives mixed with coconut oil to make a thick paste for the hair. Very common in Samoa." (*Stearns.*)

36883 and 36884. STYLOMA PACIFICA (Seem. and Wendl.) O. F. Cook. (*Pritchardia pacifica* Seem. and Wendl.)

"*Niu-piu;* the fan palm." (*Stearns.*)

36885. SCLERIA POLYCARPA Böckeler.

"*Selesele;* species of sedge." (*Stearns.*)

36886. CEIBA PENTANDRA (L.) Gaertner. **Kapok.** (*Eriodendron anfractuosum* DC.)

"*Vavæ;* tree cotton."

36887. COLOCASIA sp.

Tuber.

36888. MYRCIARIA CAULIFLORA (Mart.) Berg. **Jaboticaba.**

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 25, 1913.

"(No. 32a. December 5, 1913.) Two hundred and thirty-eight seeds of the jaboticaba, from specimens purchased in the Bahia market. The variety (or species) seems to be distinct from either of those sent in from Rio de Janeiro, the seeds being slightly larger, less compressed, and the cotyledons white instead of pinkish. The majority of the fruits contain only one seed, but two are found in some instances. The fruits average over an inch in diameter. The color is deep purplish maroon. We find the jaboticaba when fully ripe to be of an exceedingly agreeable flavor. This fruit is certainly worthy of a thorough trial in southern Florida and southern California." (*Dorsett, Shamel, and Popenoe.*)

36889 to 36896.

From Tientsin, China. Presented by Dr. Yamei Kin, Pei-Yang Woman's Medical School and Hospital. Received December 27, 1913.

36889 to 36895. ZEA MAYS L. **Corn.**

36889. "No. 1. Two ears of the red *mi pang tze*, an early variety called *chen chu*, 'pearl,' on account of its small size. From Yutien district in Chihli Province." (*Kin.*)

36890. "No. 1. One ear of a white variety of the *mi pang tze.* From Yutien district in Chihli Province." (*Kin.*)

36889 to 36896—Continued.

36891. "No. 1. Another variety of the early *mi pang tze*, called the *ma ya*, 'horse teeth,' on account of its shape and size." (*Kin.*)

36892. "No. 2. *Mi pang tze* from the Shali ho district, which is not far from Peking. Also from Chihli Province." (*Kin.*)

36893. "No. 2. *Mi pang tze* of a late variety from the Yutien district, Chihli Province." (*Kin.*)

36894. "Loose corn from package No. 1. From Yutien district, Chihli Province."

36895. "Loose corn from package No. 2. From the Shali district."

36896. SESAMUM ORIENTALE L. **Sesame.**

"From Yutien district, Chihli Province. Seed of the best sesame of this district, which is noted for its good sesame oil.

"The sesame seed is very small and needs to be thinly sown in rows, so that between the plants there will be a hand's span of space, and the rows should be wide enough apart to permit an animal to pass, to draw the harrow, as they say in China. It is what I should judge to be about 2 feet. It is important to allow space enough, or it will not make a good strong growth. The little bagful is sufficient for a mu [about one-sixth acre] of ground. It does not need much moisture, doing best in such soil as is good for maize, and needs only about the same amount of manure. It is particular in that it will not bear at all if any other kind of plant is put in between the rows. You know the Chinese are great on mixing a row of beans or something small between the kaoliang or maize.

"This sesame should grow to be about the height of a man, say 5 feet, more or less, depending on the vigor of growth. When the leaves at the bottom of the stalk begins to turn yellow it should be gathered and tied into bundles and stood up straight till such time as the pods, as they say, 'open their mouths'; then, picking the stalks up, shake them upside down into a flat basket, when the seeds will readily fall out. If it is desired to let the seed ripen fully on the stalk before gathering, one must put a flat basket under the stalk and shake the stalk, or else the seeds will largely be lost, as they fall out readily once the pods dehisce.

"In making the oil, the process is not by the ordinary method of pressure, but as follows: First, the seed must be lightly roasted to a brown color, but not burned, or else the oil will be bitter. The heat makes the oil give out a peculiar nutty odor. It is lightly ground in a small mortar till it is like a coarse meal, and then it is stirred in a bowl with a wooden stick, adding a little water when it becomes a very sticky mass and the whole adheres together like a lump of dough. Adding more water at this stage, while constantly stirring, drives out the oil, which appears in the bowl separate from the sticky mass. The first lot of water produces the best oil, and successive additions produce oil that is thinner and thinner, and finally the mass falls apart, when there is no more oil to be obtained. The residue is used for fertilizer. It is excellent for potted plants, being clean and quick in action, though it does not last as long as some other kinds of fertilizer, according to my limited experience. I asked why they did not press the oil as with peanuts, etc., and the reply was that it would be wasting so much oil, for the Chinese have only the primitive stone mills, and they would require a large amount of seed to begin with and much would adhere to the stones, so that it would be lost. It is considered the finest oil for cooking purposes, and what I have tried certainly has yielded good results. But it requires to be fresh, and perch, doughnuts, etc., things that require to

36889 to 36896—Continued.

be fried in deep oil, are delicious, superior to those fried in the fine qualities of pure light-green olive oil that I have seen. The seeds roasted lightly over a fire in an ordinary saucepan are often added to cakes, somewhat like the poppy seeds the Germans are so fond of over their various breads and rolls, and often some of the fancy rice dishes are made with a mixture of the sesame seed. It is used largely to sprinkle over the sticks of barley sugar sold on the streets, performing the double office of powder to keep the candy from sticking together and adding a nutty flavor, which enriches the candy." (*Kin.*)

36897 to 36899.

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received December 27, 1913.

36897. ALEURITES MONTANA (Lour.) Wils. **Mu-yu (wood-oil) tree.**

"*Mu-yu.* The three species of Aleurites, *fordii* Hemsl., *montana* (Lour.) Wils., and *cordata* R. Br., from very early times have been almost hopelessly confused. The first mention of the *Mu-yu shu* (literally, wood-oil tree), *A. montana* (Lour.) Wils., occurs in Lamarck's Encyclopédie Méthodique Botanique, where, under the name *Dryandra oleifera*, the fruit of this tree is described, in conjunction with the flowers and foliage of *A. cordata* R. Br. He [Lamarck] states that it is called *Mou-yeou* by the Chinese and that it was cultivated in the Jardin du Roi, at l'Isle de France. The Jesuit missionary, Loureiro, a Portuguese, established himself at Canton in 1779, and for three years investigated the flora of that region. He secured specimens of the *Mu-yu shu*, and in his Flora Cochinchinensis, page 518 (1790), describes it as *Vernicia montana*, and his specific name, being the oldest valid name, must stand. Subsequent authors have given other names to this tree, and several of them, notably Mueller Arg. (in De Candolle's Prodromus, vol. xv. pt. 2, p. 724, 1866), continued the confusion begun by Lamarck (loc. cit.).

"As a cultivated tree, *A. montana* occurs in the subtropical parts of southeastern China, from the province of Fokien southward to Tonkin, and is also undoubtedly a native of these regions. It requires, without question, a subtropical climate and a more abundant rainfall than its more northern relative, *A. fordii*. In the central part of the Fokien Province, both *Mu-yu* and *Tung-yu* trees occur, according to Dunn (Report of the Botanical and Forestry Department, Hongkong, 1905, p. 117), and are known colloquially as *Hwa-tung* and *Guong-tung*, respectively. The *Hwa-tung*, to quote Dunn, 'is the most valued, because all the flowers of the majority of the trees produce fruit from which the oil is made, while in the second kind a few flowers only in each cluster are perfect, quite 80 per cent being male flowers.' This statement is not borne out by specimens before me, including some collected in Fokien by Dunn. The inflorescences might almost be classed into male and female, but there is nothing to indicate whether or not they came from the same or different trees. From the herbarium material one might reasonably assume that the tree was nearly dicœcious, yet in all probability it is monœcious, as in other species of the family, but with a strong tendency to have the male and female flowers collected in different inflorescence of the same tree.

"The *Mu-yu* tree in size, habit, foliage, and general appearance (but not in the flowers and fruits) closely resembles the *Tung-yu* tree (*A. fordii* Hemsl.). The flowers are borne in a terminal corymb or a raceme on shoots of the current season's growth after the leaves have fully expanded. The 'male' inflorescence is many flowered, much branched, corymbose, 15 to 20 cm. long, and 20 to 30 cm. (1 cm. equals 0.3937 inch) broad. The 'female' inflorescence is

36897 to 36899—Continued.

relatively few flowered, racemose, and 8 to 12 cm. long. The fruit is markedly distinct, being egg shaped, 5 to 6 cm. long, 4 to 4.5 cm. wide, pointed at the summit and flattened at the base, with three longitudinal and many traverse, much-raised ridges; the interior part of the fruit (mesocarp) is thick and woody and incloses (usually) three compressed, broadly obovoid seeds, each about 3 cm. long by 2.5 cm. broad, and warty on the outside. When ripe, the fruit opens from the base upwards into three parts and the seeds can then be readily extracted. Since the fruit is comparatively thick and quite woody, it is not easily rotted by fermentation, as is the case in that of the *Tung-yu* tree.

"As will be shown later, the exports of oil from this tree are small, and it is quite impossible to cite chemical analyses that apply solely to the *mu-yu*, the product of *A. montana*. In all probability *Mu-yu* has been investigated by chemists, but, owing to the botanical confusion that has existed down to the present, it has not been clearly distinguished from *Tung-yu* or from the Japanese wood-oil. It is therefore very desirable that both the kernels which yield this *Mu-yu* and the commercial product itself be examined by chemists, and its constants, etc., definitely established. In order to avoid any possible error, a sample of the fruit should be obtained and the seeds extracted in the laboratory." (*E. H. Wilson, in the Bulletin of the Imperial Institute, vol. 11, no. 3, July to September, 1913.*)

For an illustration of the seed and fruit of the Mu-yu wood-oil tree, see Plate VI.

36898. GARCINIA OBLONGIFOLIA Champion.

"A native of Hongkong. This is a strong-growing creeper, which produces an edible fruit of a very pleasant, slightly acid taste." (*Tutcher.*)

36899. POUPARTIA AXILLARIS (Roxb.) King and Prain.
(*Poupartia fordii* Hemsl.)

"A tree about 30 feet high in its native habitat in Hongkong. It has fruit of an acid taste, rather bigger than a damson." (*Tutcher.*)

36900. PANAX QUINQUEFOLIUM L. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From Songdo, Chosen (Korea). Presented by Mr. Alfred Welhaven, Unsan, Chosen. Received December 26, 1913.

"This seed was secured at Songdo, Chosen, the home of ginseng cultivation, and I hope the seed will prove all that is claimed for it. The ginseng from Songdo is the best in the world, according to the prices paid for it by the Chinese, who are the chief consumers of ginseng. I have secured this seed from a Korean gentleman living in Songdo, and he says the seed is first class and will surely give results if properly taken care of. His instructions are to keep the seed in damp sand." (*Welhaven.*)

36901 to 36905. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

From Peking, China. Presented by Mr. John McGregor Gibb, Peking University. Received December 26, 1913.

Quoted notes by Mr. Gibb.

36901. "Iron pod."

36902. "Small golden flower."

36903. "The yellow four in a pod."

36904. "Big, white eyed."

36905. "White flower, short stalks."

36906 to 36912.

From Dalny, Manchuria. Presented by Mr. Albert W. Pontius, American consul. Received December 26, 1913.

Quoted notes by Mr. Pontius.

36906. SOJA MAX (L.) Piper. (*Glycine hispida* Maxim.) **Soy bean.**

"Black soy bean. Shipped from Suchiatun station."

36907. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"Small black bean. Shipped from Changchun station."

36908. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

"Small bean. Chinese name *Changtou;* Japanese name *Uzura-mame.* Shipped from Sanshihlipao, near Kinchou."

36909. PHASEOLUS AUREUS Roxb. **Mung bean.**

"Small green bean. Shipped from Yingchengtsu (in the Dairen district)."

36910 to 36912. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

36910. "Small red bean. Shipped from Changchun station."

36911. "Small red-spotted bean. Shipped from Changchun station."

36912. "Small white bean. Shipped from Sunshu station."

36913 to 36924.

Presented by Mr. Lewis S. Palen, Harbin, Manchuria. Received December 29, 1913.

Quoted notes by Mr. Palen.

36913. CUCURBITA MAXIMA Duch. **Squash.**

36914 to 36919. SOJA MAX (L.) Piper. (*Glycine hispida* Maxim.) **Soy bean.**

36914. "(From Tsitsikhar, Manchuria. November 5, 1913.) Yellow. White-eyebrow variety, *Ta pai mei.* This bean is used for oil, bean curd, sauces, and bean sprouts. This sample is from about 100 miles east of this neighborhood. This variety is found mostly west of Kaiyuan and Tiehling on the South Manchuria Railway. The estimated yield is from 936 to 2,574 pounds per acre, and the price roughly estimated at 46 cents gold per bushel of 60 pounds on the market."

36915. "(No. 2. Changchun, Manchuria. November 1, 1913.) Yellow. Golden, round variety, *Chin yuan tou.* This bean is used for oil, bean curd, sauces, and bean sprouts. It is the variety most generally found scattered all over the bean districts of Manchuria. The estimated yield is from 936 to 2,574 pounds per acre, and the price is roughly estimated at 46 cents gold per bushel of 60 pounds on the market. The Chinese are most casual in their estimates of yields."

36916. "(No. 3. Kirin, Manchuria. November 1, 1913.) Large green variety, *Ta ching tou.* A bean with green epidermis and green interior. The percentage of oil is less than that of the yellow. Used as bean curd, and as bean sprouts boiled with vegetables. The estimated yield is from 936 to 2,574 pounds per acre and the price slightly less than that of the yellow; roughly, 3 per cent."

36917. "(No. 3. Changchun, Manchuria.) Small green. Green epidermis and yellow interior."

36913 to 36924—Continued.

36918. "(No. 4. Changchun, Manchuria. November 1, 1913.) Large black variety, *Ta wu tou*. The oil equals about 75 per cent of that from the yellow. Mostly fed to horses and cattle. In some places officials prohibit the use for oil, in fear of the cost of feed being too greatly enhanced. It grows best and is much used on wet and marshy lands, where the yellow and green varieties will not do well. The yield is about the same as that of the yellow. The price is from 1 to 2 per cent higher than the yellow, owing to the Japanese demand at Dalny. The Chinese do not know the reason why it is preferred to the yellow."

36919. "(No. 5. Tsitsikhar, Manchuria. November 5, 1913.) Flat, black variety, *Pien wu tou*. The oil equals about 75 per cent of that from the yellow. Mostly fed to horses and cattle. In some places officials prohibit the use for oil, in fear of the cost of feed being too greatly enhanced. The sample probably comes from about 100 miles to the northeast of here. It will do well in very wet ground. The price is estimated at about 50 cents gold per bushel of 60 pounds on the Tsitsikhar market, which is slightly lower than the price of the yellow."

36920. PHASEOLUS AUREUS Roxb. **Mung bean.**

"(No. 6. Changchun, Manchuria. November 1, 1913.) Green beans, *Lu tou tze*. Boiled with rice, when it is supposed by the Chinese to have a laxative effect; used also in making vermicelli. Quite generally found throughout bean districts. The yield, roughly estimated, is 1,700 pounds. The retail price in the Changchun market is 65 cents gold per bushel of 60 pounds."

36921 to 36923. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"Used boiled with kaoliang, corn, and other grains. The beans are first put in the kettle and cooked some time before the grains are added. Used also for white vermicelli. Although earlier than the yellow, green, and black soy beans, these small beans are said to be more confined to the southern districts. I can not vouch for this. The yield, roughly estimated, is 1,500 to 2,000 pounds. The price is slightly lower than that of sample No. 6 [S. P. I. No. 36920], say 5 per cent."

36921. "(No. 7. Changchun, Manchuria.) Small red bean, *Hung hsiao tou*."

36922. "(No. 8. Changchun, Manchuria.) Small gray mottled bean, *Li hsiao tou*."

36923. "(No. 9. Changchun, Manchuria.) Small white bean, *Pai hsiao tou*."

36924. PHASEOLUS VULGARIS L. **Kidney bean.**

"(No. 10. Changchun, Manchuria.) *Su cheng tou*. Earliest of all varieties. Boiled like our Boston beans. Often planted as a catch crop where the green and yellow beans failed."

36925. QUERCUS SUBER L. **Cork oak.**

From Gibraltar, Spain. Presented by Mr. R. L. Sprague, American consul. Received December 22, 1913.

"Spanish cork-oak acorns gathered in the woods in the vicinity of Gaucin, which is considered the best cork-producing region." (*Sprague.*)

36926. ASPARAGUS LUCIDUS Lindley. **Asparagus.**

From Taihoku, Formosa, Japan. Presented by the Bureau of Productive Industries, Government of Formosa. Received December 26, 1913.

"This is a scrambling plant of the most vivid green, forming an entangled mass many feet in length when cultivated in the greenhouse, but in its natural state not even a foot high. It is a native of Macao, whence it was received by the Duke of Northumberland, with whom it has produced little green flowers at Lyon. It is nearly allied to *A. falcatus*, from which it differs in its smaller solitary leaves and in the flowers not growing in racemes." (*Edwards's Botanical Register, 1844, Misc., p. 29, No. 36.*)

36927 to 36929.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received December 27, 1913.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36927. COCOS CORONATA Martius. **Nicuri palm.**

"(No. 29a. November 28, 1913.) Seeds of the nicuri palm, a species common in the region around the city of Bahia. It grows to a height of 20 or 30 feet and is usually somewhat scraggly in appearance, on account of the leaves being whipped and torn by the wind. The old leaf bases usually adhere to the trunk and are arranged spirally, giving a curious twisted appearance to the palm. The leaves are glaucous, and when well grown are very graceful, though not as feathery as *Cocos plumosa* and others of that type. In the interior of Bahia State this palm is very abundant, according to Dr. Argollo Ferrão, and goats feed on the fruits. The hard shell of the seed incloses a kernel which is fed to chickens and is sometimes eaten by the people themselves. The leaves are used as thatch and for making brooms, carpets, and hats; the nicuri hat is commonly worn by the natives in the rural districts around Bahia, and is sold in the markets at from 200 or 300 reis to 1 milreis (7 to 35 cents) each, according to quality. The plant is of slow growth. A wild orchid, called here wild vanilla, commonly grows on its trunk. It should be tried in Florida and California. These seeds were obtained at Shr. Pedro da Costa's place in Matatu, a suburb of Bahia."

36928. CANNA sp. **Canna.**

"(No. 30a. November 28, 1913.) Seeds of a wild canna which grows along the roadsides in the suburbs of Bahia. Its flowers are scarlet; the petals are narrow; the plant grows 3 to 4 feet high. For hybridization."

36929. EUGENIA UNIFLORA L. **Pitanga.**

"(No. 31a. November 29, 1913.) Seeds of the *pitanga* from select fruits produced at the country home of Dr. Fortunato da Silva in Cabulla, a suburb of Bahia. These fruits were chosen because of their unusually large size and handsome appearance. Should be tested in California and Florida as a selected strain of this interesting fruit. The pitanga is extensively used here as a hedge plant, and appeals to us as being unusually good for this purpose. The fruit is esteemed by the natives, especially when made into jelly or preserves. Pitanga sherbet is also popular in Bahia and is served in the cafés. Since the plant is already known in California and Florida under the name of 'Surinam cherry,' a description of this fruit is not necessary."

36930. CARICA PAPAYA L. **Papaya.**

From Brooksville, Fla. Grown at the Plant Introduction Field Station, Brooksville. Received December 30, 1913.

Seed of original plant given to Mr. Gomme by Mr. A. F. Spawn, late of Kissimmee, Fla. Seed supposed to be of Porto Rican origin. "We have two trees fruiting in the garden here, and they have withstood the cold these two seasons so far. The fruit appeals to me more than the Texas and Mexican varieties, being a little larger and sweeter; in fact, it is one of the best flavored papayas I have ever eaten. They make excellent preserves when cooked with lemon and a small quantity of apple." (*Gomme.*)

36931 to 36933.

From Elim, German Southwest Africa. Presented by the Finnish Mission. Received December 26, 1913.

36931. PENNISETUM GLAUCUM (L.) R. Brown. (*Pennisetum typhoideum* Rich.) **Pearl millet.**

"*Omahangu.*"

36932. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) **Sorghum.**

"Native name '*Iilja.*' Red seeded."

36933. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

"*Omakunde*, native pea."

36934. CYPHOMANDRA BETACEA (Cav.) Sendt. **Tree tomato.**

From La Guayra, Venezuela. Presented by Mr. Thomas W. Voetter, American consul. Received December 30, 1913.

"*Tomate extranjero.* Seeds of a fruit growing wild on the mountains near La Guayra. The accounts of the nature of the plant are conflicting, some stating that it is a tree about the size of a coffee tree; others that it is an annual and small. It is comparatively scarce. The fruit seems to be a species of tomato. It is about 3 inches long, with a diameter about half that. It is ovoid in shape, with a very firm and smooth skin, red in color, glossy, and of very attractive appearance. The flesh is firm and nearly fills the fruit, the seeds being relatively few in number and comparatively hard. The consistence, structure, and flavor of the flesh are very like a tomato. It preserves well. This plant is said not to be a native of Venezuela, and the names given, *Tomate extranjero* and *Tomate francés*, would indicate the same." (*Voetter.*)

36935 and 36936. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) **Sorghum.**

From Carignan, Ardennes, France. Purchased from Denaiffe & Fils. Received December 30, 1913.

36935. Black. **36936.** White.

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1914.

(No. 38; Nos. 36937 to 37646.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1914 (NO. 38; NOS. 36937 TO 37646).

INTRODUCTORY STATEMENT.

While plants adapted to cultivation in the Southern States predominate in this inventory, it is probable that something of interest to nearly everyone who is experimenting with plants will be found described or listed in it, and this introductory statement is designed to point out certain interesting features regarding them which occur to the writer even before sufficient time has elapsed since their introduction to make anyone really familiar with their behavior in this country.

Whether the Kerguelen cabbage (*Pringlea antiscorbutica*, No. 37554), which is a low, sprawling plant with heads of leaves sometimes 18 inches across, that occurs close to the seashore on Kerguelen Island, will ever thrive in this country may be a question, but no doubt those interested in cabbages will be glad to test it. It has a dense white heart and a taste like mustard and cress, though coarser. The *Lü tou* (*Phaseolus aureus*, No. 37078), a bean from which in China a starch that is considered superior to corn or wheat starch is prepared for laundry purposes, deserves to be investigated in this country. A collection of 23 varieties of beans (Nos. 37036 to 37058) from Fusan, Chosen (Korea), may yield some valuable sorts for cultivation in our gardens after they become acclimated. And among the 98 varieties of soy beans secured through Consul General Seidmore, of Seoul (Nos. 37228 to 37325), and similar collections from Pyeng Yang (Nos. 37326 to 37356) and Kongju (Nos. 37396 to 37404), Chosen (Korea), there should be some valuable forms of this remarkable food plant. The eight named varieties (Nos. 37145 to 37152) of Japanese udo from Kanagawa Ken propagated by cuttings will doubtless make it possible to lengthen materially the season of this new spring vegetable.

Nut growers will be interested in testing the English walnut variety (No. 37225) which Dr. Trabut has sent in from the moun-

tains of Algeria, where it has been grown for centuries by the natives and appears to have become fixed in character.

The possibility of greater or less resistance of the Chinese chestnut (*Castanea mollissima*) to the chestnut bark disease will make Frank N. Meyer's discovery of two superior fruiting varieties (Nos. 37547 and 37548) in the region south of Sianfu of peculiar interest.

Varieties of Abyssinian flax from Addis Abeba (Nos. 37085 to 37089), secured through the courtesy of Capt. Sandford, of the British Legation, may be valuable to the students of the flax industry if the peculiar adaptability of Abyssinian barleys to California conditions is an indication of similarity of climate.

Egyptian-cotton growing has become an industry in California, but experimenters are still at work testing different strains, and they may find something of value in a reported nearly wild form from Angola, Africa (No. 37125), which there develops a very strong fiber. Although it is perhaps a question whether American paper manufacturers are yet ready to put on their program the investigation of any grass for paper-pulp purposes, the preliminary trial of *Ischaemum binatum* (No. 37014), which has been experimented with for this purpose in British India, can hardly fail to interest them.

There are now a number of bamboo groves in the Southern States, and the fact has been abundantly demonstrated that there are thousands of square miles of territory which might be covered with species of this remarkable plant. Whether the Takuara bamboo of Paraguay (*Bambos guadua*, No. 37009), which grows on low, sandy lands along the rivers and attains a height of 60 feet, will prove hardy remains to be determined.

The expedition from this office sent to Bahia and Rio de Janeiro to investigate the culture of the navel orange found in occasional use there as a cover crop a species of Crotalaria (No. 36969) which may prove valuable for dry or semiarid orchard lands in this country. Information has come through the same source regarding the use in that region of the fruits of the Macaúba palm (*Acrocomia sclerocarpa*, No. 37382) for hog feed. The thick layer of white, starchy material surrounding the hard kernel is said to be preferred to corn and to be very fattening. The fruit clusters of these palms weigh as much as 65 or 75 pounds.

Of grain crops for trial perhaps the most interesting are the sorghum varieties (Nos. 36960 to 36963), which are grown by the Matabele, Setchuana, Mambukuschu, and Serotse tribes of southwestern Africa, the pearl millet (No. 36959), from German Southwest Africa, and a collection of wheat, rye, barley, and buckwheat (Nos. 37154 to 37167) from the Tulun Experiment Field of Russia.

This inventory contains a number of interesting new fruits as a result of the work of the Brazilian expedition composed of Messrs.

P. H. Dorsett, A. D. Shamel, and Wilson Popenoe. These will be of special interest to experimenters in California, southern Texas, and Florida. They include a large-fruited variety of the cashew (No. 37027), a fruit tree which deserves to be better known in Florida. Not only is its fruit edible, both out of hand and preserved or in the form of an ade, but the nut when roasted is one of the most delicate of all table nuts.

The pitomba (*Eugenia luschnathiana*, No. 37017), a deep orange-colored aromatic fruit of the myrtle family which ripens in December; the imbu (*Spondias tuberosa*, No. 37018), a drought-resistant tree of the caatinga lands of the interior of Brazil, the fruits of which are consumed in great quantities, both fresh and preserved, and also used to a considerable extent in making imbuzada, a drink peculiar to the country, made of the juice and pulp of the fruit mixed with boiling milk; the so-called wild lemon (*Rheedia edulis*, No. 37384), a relative of the mangosteen; the cambucá (*Myrciaria edulis*, No. 37094), a relative of the jaboticaba, with a flavor resembling that of the passion fruit; the grumichama (*Eugenia dombeyi*, No. 36968), another species of the myrtle family, which resembles remotely our cultivated cherry and is pronounced by the members of the expedition one of the most agreeably flavored fruits of its class; the gravatá (No. 36967), a wild relative of the pineapple, with straw-colored, spicy, delightfully acid fruits and a skin containing a strong vegetable acid which attacks the hands, lips, and mouth of anyone thoughtless enough to handle it carelessly; the pera do campo (No. 37392), an extremely interesting wild fruit-bearing bush which has not yet been cultivated, although it bears large pear-shaped aromatic fruits on shoots not over 4 feet high; the laranja da terra (No. 36971), a citrus stock on which in Bahia the navel orange is grown; the laranja selecta (No. 36947), a promising variety of orange which it is thought is likely to mature its fruits in California during spring and summer, and as it has no thorns and produces fruits of ideal shape for packing, it may possibly prove to be of considerable value to citrus growers in Florida and southern California; the lime orange (Nos. 36949 to 36951), with a flavor halfway between that of the orange and the lime; a shaddock reported to be seedless (No. 36946), and a juicy pink-fleshed shaddock (No. 36945) are some of the other introductions of the expedition covered by this inventory.

The Japanese and Chinese persimmon collections now in this country have been materially added to through the introduction of 9 varieties (Nos. 37465 to 37473) collected by Mr. Meyer near Lingpao, Honan; 16 varieties (Nos. 37525 to 37540) from Nantotchu, south of Sianfu; and a collection of 46 varieties (Nos. 37168 to

37213) from Prof. Tanikawa, representing the collection growing at the Okitsu Government Horticultural Experiment Station in Japan. Those interested in the question of stocks for the cultivated pear will want to test the pear-quince hybrid Pyronia (No. 37606), which has been favorably mentioned by Dr. Trabut.

The lime growers on the Florida Keys will doubtless test the Sylhet, or Rungpur, lime (No. 37084), sent in by Mr. A. C. Hartless from Seharunpur, where it is used for softening leather.

Additions to the Chinese jujube collections have been made through the *Ya hu tsao*, or "gourd-shaped jujube" (No. 37069), sent by Dr. Yamei Kin, and the large-fruited jujubes of Lingpao (Nos. 37475 and 37476), where hundreds of acres of this fruit were seen by Mr. Meyer.

The Chinese Cudrania, a close relative of the Osage orange, has proved hardy at Washington; and as many of the Javanese trees have shown their ability to thrive in southern Florida, the introduction of both male and female forms of a Javanese Cudrania with bright orange fruits which are considered edible by the Japanese in Formosa (Nos. 36986, 37015, and 37016) is of interest, in view of the fact that hybrids have already been made between Cudrania and the Osage orange.

The following additions to the shrubs and trees suitable for door-yard and park planting appear in this inventory:

The Sumatra Casuarina (No. 37119), which, if it thrives, can scarcely fail to be more cheerful as a street tree in Florida than the Australian species; the Queensland gold-blossom tree (*Barklya syringifolia*, No. 37134), which bears racemes of golden yellow flowers; *Bauhinia hookeri* (No. 37135) from Australia, which bears white flowers with crimson edges; three hardy Chinese species of Cotoneaster (Nos. 37596 to 37598); five species of barberries (Nos. 37495 to 37499) originally from China and the mountains of tropical Asia; five distinct varieties of the Chinese allspice (*Meratia praecox*, formerly *Chimonanthus fragrans*, Nos. 37487, 37488, and 37522 to 37524), a fragrant flowering shrub of interest to florists; and the large-flowered tropical *Talauma hodgsoni* (No. 37216), which bears blooms 6 inches across, resembling the magnolia.

Chinese names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that reference work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of introductions have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory, as of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., July 29, 1916.

INVENTORY.

36937 and 36938. Linum usitatissimum L. Flax.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received January 3, 1914.

Secured from two different dealers in flaxseed and therefore given distinct numbers as representing perhaps two distinct varities. For the use of the Office of Cereal Investigations in its work on flax.

36939 and 36940.

From Kalat, Baluchistan. Presented by Capt. S. Williams, assistant political agent, Mastung, Kalat, Baluchistan, India. Received January 3, 1914.

36939. Hordeum vulgare L. Barley.

"Barley grown in this State." (*Williams.*)

36940. Triticum aestivum L. Wheat.
(*Triticum vulgare* Vill.)

"Wheat grown in this State." (*Williams.*)

36941. Solanum tuberosum L. Potato.

From Bogota, Colombia. Presented by Señor J. M. Vargas Vergara, Department of Agriculture. Received January 3, 1914.

"*Papa gruesa*, a variety of *tuquerrena*, selected at random, which will show you the development the tubers reach here, these presumably not being the largest." (*Vargas Vergara.*)

36942 to 36954.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received January 8, 1914.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36942. Citrus sinensis (L.) Osbeck. Sweet orange.

"(No. 42. Bahia, Brazil. December 13, 1913.) Navel orange bud sticks from select tree No. 6, Dr. Fortunato da Silva's place, Cabulla. Circumference of trunk, 21½ inches; height of tree, 14 feet; spread of tree, 17 feet; habit of growth, spreading. Tree 12 feet from coffee bushes. Two main branches, forking 19 inches above ground; foliage dense, dark green; leaves elliptical, medium size, petiole medium size; no thorns. Fruits, June crop, 296; December crop, 14. No variations of fruit noticed. Fruits borne all through the tree and of yellowish brown color for the ripe ones. Navel small to medium size, mostly rudimentary. Brown and cottony scale, lichens, and several fungi on the tree. Very little mottle-leaf and very little gum disease. No plant parasites. Tree about 14 years old. Few dead branches. For trial in California for improved navel types."

36942 to 36954—Contd. (Quoted notes by Mr. Dorsett and others.)

36943. CITRUS MEDICA L. **Citron.**

"(No. 45. Bahia, Brazil. December 19, 1913.) Thirteen cuttings from the grove of Dr. Miguel de Teive e Argollo, Roma, Bahia. Typical citron of commerce of very good quality. For trial in southern California."

36944. CITRUS GRANDIS (L.) Osbeck. **Shaddock.**

"(No. 46. Bahia, Brazil, December 19, 1913.) Bud sticks of sweet shaddock or grapefruit from Dr. Miguel de Teive e Argollo's grove, Roma, Bahia. Large pear-shaped fruit, thick skinned, straw-colored flesh, sweet flavor, somewhat resembling the grapefruit in quality. Tree very productive. For trial in southern California."

36945. CITRUS GRANDIS (L.) Osbeck. **Shaddock.**

"(No. 48. Bahia, Brazil, December 19, 1913.) Thirty bud sticks of pink-fleshed shaddock or grapefruit from the orchard of Dr. Miguel de Teive e Argollo, Roma, Bahia. Mr. Popenoe says this fruit resembles the Indian pummelo. Its shape closely resembles that of a slightly flattened typical *Marsh's seedless* grapefruit, but it is two to four times the size. Very smooth, thick skin. Flesh a beautiful pink color, very attractive and striking. Fairly juicy, strong grapefruit flavor, very few seeds. This fruit is of possible value for use in salads aside from its use as a breakfast fruit. The texture of both the skin and flesh is very tender, which may render this fruit a valuable addition to our citrus fruits for making preserves. Tree productive under unfavorable conditions for fruiting. Very little mottle-leaf or gum disease and apparently resistant to both. Should be tried extensively in both Florida and California and the fruits tested for the manufacture of grapefruit products."

36946. CITRUS GRANDIS (L.) Osbeck. **Shaddock.**

"(No. 49. Bahia, Brazil, December 19, 1913.) Nineteen bud sticks of what was reported to be a seedless shaddock from the orchard of Dr. Miguel de Teive e Argollo, Roma, Bahia. Dr. V. A. Argollo Ferrão says this is the true *laranja tanja*, which is frequently recommended as a stock for budding navel oranges. The tree has very little mottle-leaf or gummosis, and under unfavorable conditions has made a very vigorous and healthy growth. Very productive. Fruits about the size of a typical *Marsh's seedless* grapefruit. Skin rather thick but tender. Flesh tender, juicy, with strong grapefruit flavor, and many seeds. Should be tried in both California and Florida, especially for breeding purposes and as a stock on which to bud the sweet orange."

36947. CITRUS SINENSIS (L.) Osbeck. **Sweet orange.**

"(No. 50. Bahia, Brazil, December 19, 1913.) Seventeen bud sticks of *laranja selecta* from Dr. Miguel de Teive e Argollo's place, Roma, Bahia. Typical fruits, averaging about 150 size (to the box), very smooth, thin skin. Very juicy, juice slightly acid; of excellent quality. Few seeds. This fruit will probably mature in California during the spring and summer seasons and may prove a valuable addition to the summer fruits in that State. Fruits very uniform on the tree, and when started the light-green color changes to deep, somewhat reddish orange. No thorns on the tree. Very vigorous in growth under unfavorable conditions. Fruits ideal shape for packing. Should be tried in Florida and California."

36942 to 36954—Contd. (Quoted notes by Mr. Dorsett and others.)

36948. CITRUS SINENSIS (L.) Osbeck. **Sweet orange.**

"(No. 51. Bahia, Brazil, December 19, 1913.) Thirty-seven bud sticks from navel orange tree No. 1–6–1, grove of Col. Demetrio Luiz de Souza, Cruz do Cosme, Bahia. This tree is the best in the De Souza grove. Height, 18 feet; spread, 21 feet. Habit of growth, spreading; height of head, 18 inches; three main branches; dense dark-green foliage. Leaves elliptical, medium size. Petiole medium, no thorns. Fruits, June crop, 237; December crop, 49; total, 286. No variations observed in the fruits. December fruits yellowish green; navel small to medium, usually rudimentary. Brown and other common scales, lichens, and common fungi on trees. Much mottle-leaf; little gummosis. Tree 25 years old, with few small dead branches. Fruits large, symmetrical, and uniform. Should be tried in California for improved navel type."

36949 to 36951. CITRUS spp. **Lime orange.**

From Bahia, Brazil. Collected December 19, 1913.

"Bud sticks of *laranja lima*, or lime orange, from trees 1 to 3, fazenda of Col. João de Teive e Argollo, Agua Comprida, 28 kilometers north of Bahia. Large, thrifty trees; very fruitful. Very little mottle-leaf or gum disease. Dense foliage, large dark-green leaves. Petioles similar to those of the navel orange. Crop borne at different intervals throughout the year, similar to the navel orange. Fruit light green in color, skin medium thick, flesh tender, very juicy, the juice spurting from fruit when cut. Flesh light golden in color, very little rag. Flavor combines that of the orange and lime; very good. With more acid, as the navel orange grown in California shows compared to the same fruit in Bahia, the *laranja lima* will furnish a valuable fruit drink. Five or six seeds were found in the fruits cut. Col. Argollo says trees come true from seed. The trees are more productive than those of the navel orange under the same conditions and sell for more money at Agua Comprida, bringing 100 to 120 reis (3⅓ to 4 cents) apiece throughout the year. While the leaves have the petiole of the navel orange, the shape and serrations resemble more closely those of the leaves of *lima doce*, or sweet lime. Should be tried in California and Florida, more particularly in California. The fruits produced are about the same size as navel oranges grown under the same conditions on Col. Argollo's ranch. Fruits egg shaped and of desirable shape and size for commercial packing. Will average 96 to 175 fruits to the California box."

36949. "No. 52. From tree No. 1. Tree had no thorns."

36950. "No. 53. From tree No. 2. Tree had large thorns."

36951. "No. 54. From tree No. 3. Tree had no thorns."

36952. PERESKIA sp.

"(No. 55. Bahia, Brazil, December 19, 1913.) Cuttings of the *surucucú*, from a hedge in front of the orange grove of Col. Frederico de Costa, Matatu, Bahia. The thorns of this plant, of which samples were sent, it was thought might prove valuable for phonograph needles, but trial showed them to be too brittle. The plant grows 15 to 18 feet high, with a cluster of thorns at each leaf axil. For trial in California and Florida."

36942 to 36954—Contd. (Quoted notes by Mr. Dorsett and others.)

36953. CAPRIOLA DACTYLON (L.) Kuntze. **Bermuda grass.**
(*Cynodon dactylon* Pers.)

"(No. 56. Bahia, Brazil, December 19, 1913.) Root cuttings of a grass very similar in general appearance and habit of growth to the Bermuda grass grown in California. From the fields of Col. Frederico de Costa, Matatu, Bahia."

36954. OPUNTIA sp. **Prickly-pear.**

"(No. 19. Rio de Janeiro, Brazil, November 1, 1913.) Cuttings of a spineless cactus from the garden of Señor José Esteres, rua São Gonçalo, Nictheroy. The plant is about 15 feet high and is used as an ornamental."

36955 to 36958. COLOCASIA ESCULENTA (L.) Schott. **Dasheen.**

Grown at the Plant Introduction Field Station, Brooksville, Fla., season of 1913.

Tubers of the following; quoted notes by R. A. Young.

"The propagating stock of these strains consists of the tubers of a number of hills selected from S. P. I. No. 19224, a yautia from Paramaribo, Dutch Guiana, presented by Dr. C. J. J. Van Hall, Director of Agriculture, and received September 25, 1906. The corms from these hills were similar in quality, though varying in minor details of color, texture, and flavor."

36955. "A selected strain of dasheen in which the flesh of the corm when cooked is mealy, slightly nutty, and grayish white in color."

36956. "A selected strain of the dasheen in which the flesh of the corm when cooked is rather dry and firm, slightly nutty, and grayish white in color."

36957. "A selected strain of dasheen in which the flesh of the corm when cooked is mealy, of good flavor, and creamy white in color."

36958. "A selected strain of dasheen in which the flesh of the corms when cooked is fine grained and fairly mealy, slightly nutty, and almost white."

36959 to 36963.

From German Southwest Africa. Presented by the imperial governor, Windhoek. Received January 3, 1914.

36959. PENNISETUM GLAUCUM (L.) R. Brown. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

From Caprivizipfel. The native names used by different tribes for this variety, the name of the tribe being given in parentheses after each, are as follows: (No. 1.) *Mausa* (Sesuto and Serotse); *Labelebele* (Setchuana); *Niant* (Matabele); *Mahango* (Mambukuschu).

36960 to 36962. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Caprivizipfel.

36960. (No. 2.) *Susue.* Generally used term.

36961. (No. 3.) *Murua.* Generally used term. Originally imported from Bechuanaland to Caprivizipfel.

36959 to 36963—Continued.

36962. (No. 4.) The native names used by the different tribes for this variety, the name of the tribe being given in parentheses after each, are as follows: *Mavela amassen* (Sesuto and Serotse); *Lukeriga* (Serotse); *Itumbi* (Mambukuschu); *Mawele* (Setchuana); *Amawele* (Matabele).

36963. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Amboland.

(No. 5.) *Red ovambokorn.* Native name not known.

36964. NICOTIANA RUSTICA L. **Tobacco.**

From Odessa, Russia. Presented by Mr. John H. Grout, American consul. Received January 3, 1914.

"*Mahorka.* After consulting with various authorities here, I find that the name *Murchurkee* is not known in Russia, the seed desired evidently being what is known here as *Mahorka*, which I have obtained and am sending." (*Grout.*)

36965. MANGIFERA INDICA L. **Mango.**

From American Samoa. Presented by Commander C. D. Stearns, governor. Received January 7, 1914.

"From fruits which weighed over 2 pounds apiece." (*Stearns.*)

36966. TRIFOLIUM ALEXANDRINUM L. **Berseem.**

From Luxor, Egypt. Collected by Prof. S. C. Mason, of the Bureau of Plant Industry. Received January 2, 1914.

"Next to the rice in the minds of the oasis people comes the Oasis berseem for land reclaiming. They are particular in stating that it does much better following the rice on salty land than Valley berseem. I gathered that they sow about twice as much seed to the acre as we use for alfalfa. Their fields were pastured off so closely that I could not get a clear idea of the nature of their crop or how much it differs from alfalfa." (*Mason.*)

36967 to 36978.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received January 8, 1914.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

36967. BROMELIA sp. **Gravatá.**

"(No. 33a. December 6, 1913.) A bromeliaceous plant, allied to the pineapple, which grows in some of the districts around Bahia. The fruit is occasionally brought to market. In form it is oblong and usually somewhat angular, about 3 inches in length and 1 inch thick. The persistent calyx crowns the apex with a tuft of dry sepals about 1 inch in length. The fruit is translucent and of a pale straw color. The skin is about one-eighth of an inch thick, with no well-marked distinction between it and the flesh, which is translucent, crisp, and juicy, containing two or three rows of small, flattened seeds, about one-fourth of an inch in diameter. The flavor is spicy and delightfully acid. The skin must be carefully removed before eating the fruit, as it contains a principle which burns the lips and mouth severely. The fruit is produced indi-

36967 to 36978—Contd. (Quoted notes by Mr. Dorsett and others.)

vidually, not united in one compound fruit as in the pineapple. Should be tried in California and Florida. The name *gravatá* is applied to a number of bromelias here."

For illustrations of the gravatá plant and fruit, see Plates I and II.

36968. EUGENIA DOMBEYI (Spreng.) Skeels. **Grumichama.**
(*Eugenia brasiliensis* Lam.)

"(No. 34a. December 13, 1913.) The *grumichama* or *grumixama*, a myrtaceous fruit, native of Brazil, both for its ornamental value and its fruit is worthy of a careful trial in California and Florida. The tree, which grows to 25 or 30 feet in height, is shapely and densely clothed with glossy deep-green foliage. The individual leaves are elliptical, about 4 inches in length, thick, and leathery. The fruits ripen here in November, and in general appearance very much resemble cherries. The form is round or slightly flattened, the color deep crimson. The stem is 1 inch or more in length. The thin skin incloses a soft, tender pulp, of mild and delicate flavor. The seeds, one to three in number, are rounded or hemispherical, about one-fourth to three-eighth of an inch in length. The grumichama is one of the most agreeably flavored myrtaceous fruits we have tasted, and in addition the tree is a beautiful and shapely ornamental."

For an illustration of the grumichama fruit, see Plate III.

36969. CROTALARIA RETUSA L.

"(No. 35a. December 19, 1913.) Seed from two plants in the orange orchard of Col. Baretto, Cabulla. Plants 2 to 3 feet high, producing from 2 to 5 main branches, each bearing from 6 to 12 seed pods containing 12 to 20 seeds each. Root development extensive, the roots finely branched and covered with medium-sized nodules. The root system closely resembles that of vetch. Stems succulent, and if plowed under at the time would quickly decompose. This plant is self-sown in all the orchards we have visited. Dr. Argollo says it is particularly suited for dry or semidry lands, and he predicts that it may become a very useful cover crop for southern California and other semiarid regions."

36970. PHASEOLUS VULGARIS L. **Bean.**

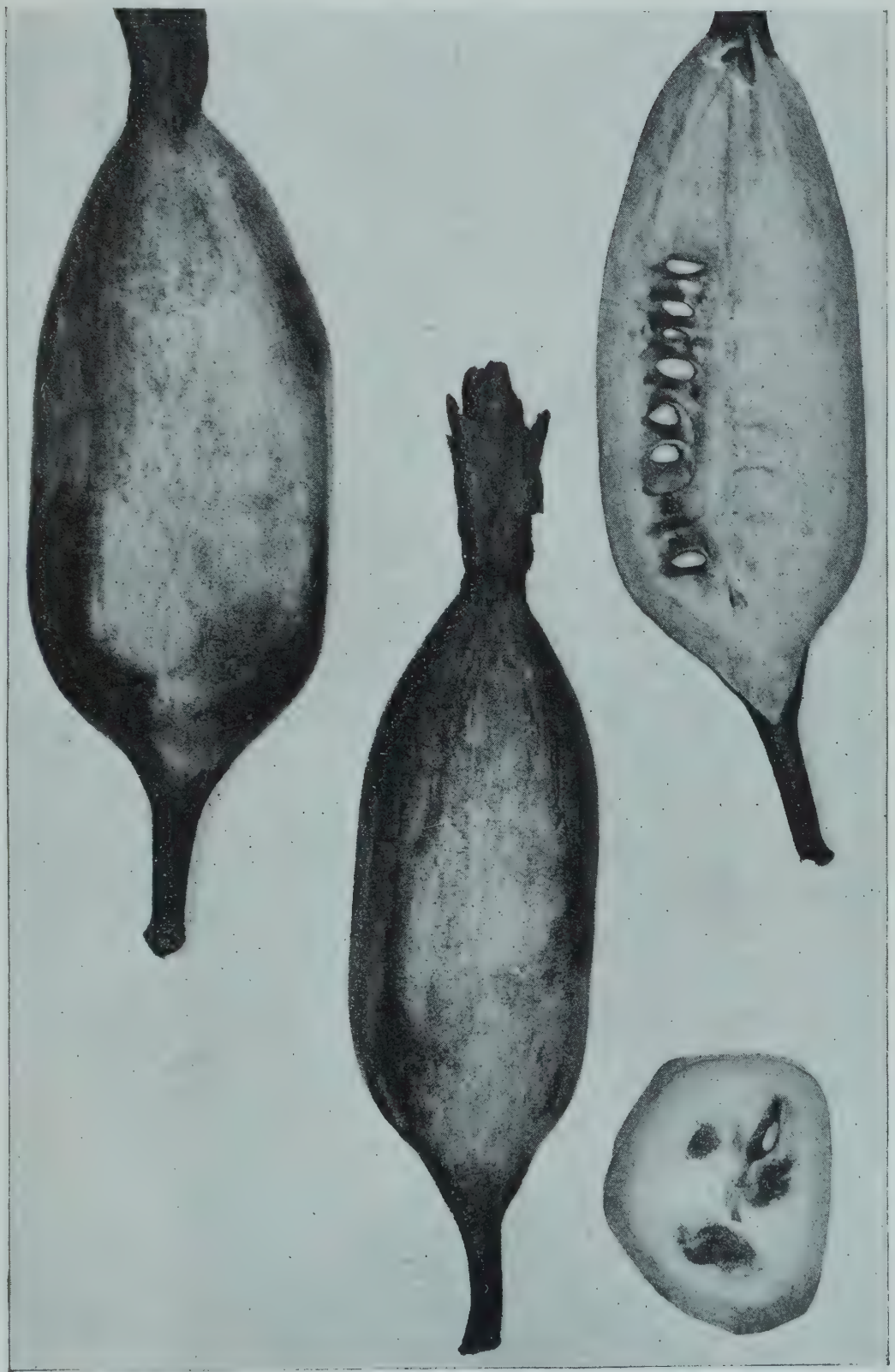
"(No. 36a. December 19, 1913.) The pink bean, *feijão*, which is the source of feijoada, one of the principal foods of the poorer class of Brazilians. Bought in the public market of Bahia at 240 reis (8 cents) per liter. Said to have been grown at Alagoinhas, in the interior of Bahia State."

36971. CITRUS AURANTIUM L. **Sour orange.**

"(No. 37a. December 19, 1913.) *Laranja da terra.* Seed from fruits grown by Col. Demetrio Luiz de Souza, Cruz do Cosme, near Bahia. This is the principal stock for the *laranja de umbigo*, or navel orange. For trial in California and Florida as stocks for other citrus fruits."

36972. COCOS CORONATA Mart. **Nicuri palm.**

"(No. 38a. December 19, 1913.) Seeds of the *Nicuri* or *Alicuri* palm, from the vicinity of Matatu, near Bahia. For a description of the plant, see S. P. I. 36927."



FRUITS OF THE GRAVATÁ, A BRAZILIAN BROMELIA, S. P. I. No. 36967.

When the outer skin is peeled back the fruit juices are sucked out. The fruit flesh is translucent, crisp, spicy, and delightfully acid. Under the skin is a layer of cells containing a vegetable acid much stronger than that in the pineapple, which attacks the lips and makes them raw. (Photographed (P15343FS) by Dorsett, Shamel, and Popenoe, Bahia, Brazil, November 29, 1913. Natural size.)

PLANT OF THE GRAVATÁ IN THE VIRGIN FOREST NEAR LAVRAS, BRAZIL, S. P. I. No. 36967.

A wild relative of the pineapple, the fruits of which are brought into the markets of Bahia. Unlike the pineapple, the individual fruits do not form a compact head. These plants should be tested in California and Florida. (Photographed (P14302FS) by Dorsett and Popenoe, January 11, 1914.)

FRUITS OF THE GRUMICHAMA (EUGENIA DOMBEYI), S. P. I. No. 36968.

The deep crimson fruits resemble cherries somewhat in appearance. They have a mild, delicate flavor, which is very agreeable, and they ripen in November in Brazil. (Photographed (P15332FS) by Dorsett, Shamel, and Popenoe, Bahia, Brazil, November 27, 1913. Natural size.)

FRUITING BRANCH OF THE PITOMBA (EUGENIA LUSCHNATHIANA), S. P. I. No. 37017.

A rare fruit belonging to the myrtle family, which is occasionally cultivated in gardens about Bahia, Brazil. It is orange yellow, thin skinned, melting, and juicy, with a very aromatic and pungent odor. (Photographed (P15387FS) by Dorsett, Shamel, and Popenoe, Bahia, Brazil, December 14, 1913. Natural size.)

36967 to 36978—Contd. (Quoted notes by Mr. Dorsett and others.)

36973. ELAEIS GUINEENSIS Jacq. **Dendé palm.**

"(No. 39a. December 20, 1913.) Seeds of the *Dendé* or *Guinea oil* palm, from trees in the vicinity of Matatu, Bahia. The fleshy pericarp of the seeds furnishes an oil which is an important food product here, especially among the negroes, with whom the palm is said to have come over from Africa. It now grows in an apparently naturalized state on the hillsides about Bahia and in many places is one of the most conspicuous features of the landscape. It is a particularly handsome plant, with long, feathery leaves and a slender trunk sometimes 50 or 60 feet high. It is probably too tropical for California, but may succeed in southern Florida, where it should be given a thorough trial both as an oil producer and as an ornamental plant."

36974. THEOBROMA CACAO L. **Cacao.**

"(No. 40a. December 19, 1913.) Seeds of *Criollo cacao* from the fazenda of Col. João de Teive e Argollo, Agua Comprida, 28 kilometers north of Bahia. For trial in Porto Rico."

36975. CITRUS AURANTIUM L. **Orange.**

"(No. 41a. December 19, 1913.) Seeds of *laranja da terra*, from the roça of Señor Pedro F. M. de Amorim, at Brotas, in the suburbs of Bahia. See S. P. I. No. 36971. For trial as a stock for commercial fruits in California."

36976. ZEA MAYS L. **Corn.**

" (No. 42a. December 19, 1913. *Catete* corn, yellow flint, ears with 12 rows of kernels. Said to have been grown at Alagoinhas, in Bahia State."

36977. GARCINIA sp. **African mangosteen.**

"(No. 43a. December 19, 1913.) Seeds of the *Mangostão da Africa*, from the fields of Dr. Miguel de Teive e Argollo, Roma, Bahia. The name 'African mangosteen' implies that it is a Garcinia, and it has every appearance of being a member of that genus. The plant is young, about 6 feet high, broad and spreading, with oblong, elliptical, leathery, thick leaves. The fruits are broadly pyriform, about 1½ inches in length, bright orange in color. The skin is thin and surrounds a small mass of bright orange pulp in which the two very large oval seeds are embedded. The flavor is acid, but pleasant. To be grown in connection with the mangosteen experiments. May prove desirable as a stock for the mangosteen."

36978. CARYOPHYLLUS JAMBOS (L.) Stokes. **Rose-apple.**
(*Eugenia jambos* L.)

"(No. 44a. December 19, 1913.) Seeds of a good form of the *jambo* or rose-apple, from a tree on the grounds of Dr. Miguel de Teive e Argollo, Roma, Bahia. Fruits of good size and quality, the skin pale yellow. For trial in Florida and California as an improved form of this fruit."

36979 to 36983.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received January 3, 1914. For the work of the Office of Forage-Crop Investigations.

36979 to 36983—Continued.

36979 and 36980. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

36981. HOLCUS HALEPENSIS L. **Johnson grass.**
(*Sorghum halepensis* Pers.)

36982. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

36983. PENNISETUM GLAUCUM (L.) R. Brown. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

36984. MUSA sp. **Banana.**

Collected by Dr. H. L. Shantz, of the Bureau of Plant Industry, in 1913, on the plantation of Mr. E. Z. Blackman, Miami, Fla. Received January 13, 1914.

"The plant is about 10 feet high and the fruit about 5 feet from the ground. It is thought that these plants may be the result of early importations made by the United States Department of Agriculture from the Philippines." (*Shantz.*)

36985 and 36986.

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received January 15, 1914.

36985. FORTUNELLA HINDSII (Champ.) Swingle. **Hongkong kumquat.**
(*Atalantia hindsii* Oliver.)

"A shrub with compressed branchlets, ovate-elliptical, leathery leaves 1½ to 3 inches long, bearing small flowers in axillary clusters, followed by small orange-colored fruits." (*Tutcher.*)

Distribution.—Found on the wooded hills in the vicinity of Hongkong, China.

"The Hongkong kumquat (*Fortunella hindsii*) differs from the round kumquat (*F. japonica*), the oval kumquat (*F. margarita*), and the Meiwa kumquat (*F. crassifolia*) in a number of morphological characters, some of them of decided taxonomic significance in this group. It may be regarded as constituting a new subgenus.

"*Protocitrus* Swingle. Differs from *Eufortunella* (1) in having the ovary hypomerous (3 or 4 celled, not 5 celled); (2) in the ovary wall of the mature fruits having on the inside between the stalks of the pulp vesicles a number of minute wartlike pale-yellow, cellular masses; (3) in having the dissepiments of the fruit dry and the peel thin and not very fleshy; (4) in having shorter, broader, more brachytic flowers; (5) in having leaves with the veins more prominent on both faces, and less pallid below.

"The two most important characters distinguishing the subgenus *Protocitrus* from *Eufortunella* are the few-celled ovary and the dimorphic *emergencen* from the ovary wall of the fruit, viz, ordinary pulp vesicles and verruciform tufts of loosely aggregated more or less colored cells.

"The Hongkong kumquat, which, as already indicated, is the sole species of the subgenus *Protocitrus*, may be described as follows:

"A spiny shrub or small tree; twigs slender, angled when young; leaves oval-elliptical, tapering sharply at both ends, dark green above and faintly venose, paler and venose below; petioles winged, often merging into the lamina of the leaf without a separative joint. Flowers short,

36985 and 36986—Continued.

broad, not opening very widely; pistil very short; style shorter than the ovary; stigma large, cavernous; ovary 3 or 4 celled; ovules 2 in a cell. Fruits small, 1.5 to 2 cm. in diameter; subglobose, bright orange red when ripe, the color of a tangerine orange; pulp vesicles very few, small, fusiform; seeds thick, oval or ovate in outline, plump, 9 to 11 by 7 to 8 by 5 to 6 mm., pistache green in section.

"The Hongkong wild kumquat grows commonly on the dry hills about Hongkong and on the mainland of China opposite." (*W. T. Swingle, Jour. Wash. Acad. Sci., vol. 5, p. 174–175, 1915.*)

36986. CUDRANIA JAVANENSIS Trecul.

"The fruit is round, rather more than an inch in diameter, of a bright orange color, with a sweet, rather insipid taste. It is quite as good a fruit as many others which are eaten." (*Tutcher.*)

Distribution.—A shrub or small tree found in eastern Africa and in India and eastward and southeastward to China and through the Malayan Archipelago to Australia.

36987. CARICA PAPAYA L. Papaya.

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received January 13, 1914.

"The *Dapitan*, or Singapore variety, recognized by us as distinct from the Hawaiian variety." (*Barrett.*)

36988 to 36990.

From St. Denis, Island of Reunion. Presented by Mr. August de Villiles. Received January 6, 1914.

36988. PHASEOLUS CALCARATUS Roxb. Rice bean.

"The rice bean is cultivated to a limited extent in Japan, China, India, Mauritius, Java, and the Philippines. What is supposed to be the wild original of this bean occurs in India.

"The plant is strictly an annual and is half twining in habit. Planted in rows, the different varieties grow 12 to 30 inches high and produce vining branches 3 to 6 feet long. The leaves closely resemble those of the common bean, but not infrequently are 3 lobed. The flowers are bright yellow, produced in racemes of 10 to 20. The pods are smooth, slender, falcate, straw colored, brownish, or blackish, 3 to 4 inches long, and burst open readily at maturity. Though very productive of seed, the vining habit of the plant, as well as the shattering, makes it difficult to harvest. The flowers are self-fertile, as when bagged at Arlington Farm they set pods perfectly.

"Like other annual legumes, the later varieties are much larger in growth than the early ones. The late ones are very vigorous in growth and make a thick, dense mass of foliage. Such sorts may prove valuable as cover crops in the South, but, unfortunately, they are all subject to root-knot. This, together with the shattering of the seed, will always militate against their extensive use.

"The varieties differ mainly in their periods of maturity and in the color of the seeds, which are straw-colored, brown, maroon, black, and gray marbled.

36988 to 36990—Continued.

"The plant is well adapted to practically the same area as the cowpea and will doubtless attract attention from time to time. Under present conditions it is very doubtful whether this bean can be economically utilized in this country.

"In different parts of India various vernacular names are given to this bean, among them *Sutri, Sita-nas, Pau maia, Gurush,* and *Gurounsh.*

"In Japan it is called *Tsuru adsuki;* in China, *Mu-tsa* (Shanghai), 'Crab-eye' or 'Lazy-man' pea (Soochow), and 'climbing mountain bean' (Yachow); in Cuba, where introduced, 'little devil,' or 'mambi,' bean." (*C. V. Piper.*)

36989. STIZOLOBIUM ATERRIMUM Piper and Tracy. **Mauritius bean.**

For a detailed description of this plant, with discussion of its value, see Bureau of Plant Industry Bulletin 179, entitled "The Florida Velvet Bean and Related Plants," by C. V. Piper and S. M. Tracy, 1910.

36990. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

"A very late, procumbent cowpea of poor habit; apparently of no value." (*C. V. Piper.*)

36991. CARAGANA ARBORESCENS Lam. **Siberian pea tree.**

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received January 9, 1914.

For propagation at the Northern Great Plains Field Station, Mandan, N. Dak.

36992. SOLANUM POLYADENIUM Greenman. **Potato.**

From Soulseat, Castle Kennedy, Scotland. Presented by Mr. J. Aikman Paton. Received January 15, 1914.

"Pubescent throughout, with hirsute spreading hairs intermixed with densely crowded stipitate glands, heavy scented. This very pronounced and very disagreeable odor corresponds absolutely to that which is given off when the leaves of *Ailanthus glandulosa* L. are crushed. It is not found to my knowledge in any other species of *Solanum* (among the tuber-bearing) and is sufficient, aside from its pale-leaved foliage of very peculiar form, resembling that of the tomato, to make it immediately distinguishable from all others. Tubers white; stems somewhat striate-angled; leaves pinnatisect, 5 to 12 centimeters long, 4 to 8 centimeters broad, usually auricled at the base by small subfalcate leaves of reduced axillary branches; segments 7 to 9, lance-oblong to ovate, 1.5 to 4 centimeters long, 0.5 to 2 centimeters broad, somewhat acuminate, obtuse, abruptly contracted below into an oblique subpetiolulate base; intermediate segments much smaller, very unequal, rarely more than a centimeter in length; inflorescence terminating the stem and branches in pedunculate falsely dichotomous, more or less horizontally spreading cymes; flowers several; peduncles 1 to 2.5 centimeters long, jointed; calyx five parted; segments sublanceolate to somewhat oblong, often abruptly contracted into an attenuated apex, persistent; corolla five angled, plicate, about 1 centimeter high and 2 centimeters broad, white; ovary and style glabrous; fruit conical-ovate, 10 to 13 millimeters long, two-thirds to nearly as broad, glabrous. Mexico, State of Hidalgo; limestone hills, El Salto station, September 15, 1902. C. G. Pringle, No. 8692 (herb. Greenman)." (*Greenman, Proc. Am. Acad. Arts and Science, vol. 39, p. 89, 1903.*)

36993. ALEURITES FORDII Hemsley. **Tung tree.**

From Hongkong, China. Presented by Mr. George E. Anderson, consul general. Received January 12, 1914.

"Wood-oil nuts from Yingtak, Kwangtung Province, China, which were brought to this office by Mr. M. P. Roach, of this city." (*Anderson.*)

36994 and 36995.

From Saigon, Cochin China. Presented by Mr. P. Morange. Received January 14, 1914.

36994. COIX LACRYMA-JOBI L. **Job's-tears.**

"This is the only variety existing in Cochin China." (*Morange.*)

36995. FERONIELLA OBLATA Swingle.

"Spiny tree, 25 to 65 feet high, native to Cambodia and Cochin China; leaves odd-pinnate, three to four pairs; leaflets covered with small whitish hairs, especially when young, pellucid-punctate, oval or obovate, crenulate when young, often emarginate, with a very short petiole; rachis pubescent; flowers in many-flowered panicles, white, very fragrant, usually five parted, with lanceolate pointed petals; stamens four times the number of the petals, anthers large, oval, filaments joined together at the base by the woolly pubescence of the appendices occurring on their inner side; flowers borne in clusters of 3 or 4, flattened spheroid. This species occurs commonly in the forests of Cambodia and is sometimes cultivated by the natives for its flowers which, when young, have a pronounced orange odor and are used as a condiment in sauces." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1219, 1915.*)

36996. ZEA MAYS L. **Corn.**

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received January 8, 1914.

"An ear of corn raised in American Samoa. The name of the corn is not known, and it was raised quite by accident, a woman having planted a few seeds." (*Stearns.*)

36997. SOLANUM TUBEROSUM L. **Potato.**

From Bogota, Colombia. Presented by Señor J. M. Vargas Vergara, Ministro de Obras Publicas. Received January 9, 1914.

"Seed potatoes which I have received from the region of Pamplona, Department of Santander. While the sample referred to is not precisely that which you desired, since it is not a native potato, and it has been cultivated, I believe, notwithstanding, that it will be of interest to you and I am quoting below the information given me by the prefect of the Province of Pamplona: 'The potato which is sent to-day is known as *papa montañera* and is cultivated in clayey earth at an altitude of 2,000 meters above the level of the sea at a temperature of 18° C.

"'There is a current story that a hunter found in the mountains of this country a plant called potato; he transplanted it into his garden, from which the cultivation has spread and reached to-day a point where considerable numbers are cultivated.'

"It is said that this potato resists very well the shipment to warm countries and keeps well in condition for eating for several months. My attention was called to the excellent condition in which the sample arrived with reference to this last observation, and, moreover, the complete absence of disease and insects, which invariably attack the tubers in other localities." (*Vargas Vergara.*)

36998 to 37001.

From Erfurt, Germany. Purchased from Haage & Schmidt. Received January 7, 1914. For the experiments of the Office of Forage-Crop Investigations.

36998 to 37000. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) **Sorghum.**

36998. Black.

36999. White.

37000. Brown.

37001. HOLCUS HALEPENSIS L. (*Sorghum halepensis* Pers.) **Johnson grass.**

37002 and 37003. PHASEOLUS ANGULARIS (Willd.) Wight. **Adzuki bean.**

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received January 5, 1914.

"The adzuki used in this region seems to be identical with the sample you sent me [S. P. I. No. 17851]. I found only one other sort, the white.

"The Japanese use the adzuki in two ways. They boil them soft and mix them with boiled rice and salt, making a mass called *akameshi* (red food), which is used particularly on certain festive occasions. They also use them in confections, boiling them very soft, straining through a cloth and mixing with sugar in various ways. There is also an adzuki flour, which is used to make the same confections, but is considered less delicious, though more convenient. I should have said that in making the ordinary *an* the boiled adzuki are put through a sieve to remove the hulls and then put into a bag and squeezed to remove the excess of moisture. Brown sugars are commonly employed. One variety, *yokan*, is made by adding *kanten* [isinglass, a gelatine made from seaweed] to the *an*." (*Noss.*)

37002. Common adzuki.

37003. Yellow adzuki.

37004 and 37005.

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., January 3, 1914. Received here January 8, 1914.

Cuttings of the following; quoted notes by Mr. Meyer.

37004. FORSYTHIA SUSPENSA (Thunb.) Vahl.

"(No. 1044. December 1, 1913.) A variety of golden bell with flowers apparently larger than the ordinary sort commonly found in European and American gardens. Very resistant to drought and able to stand a fair amount of alkali in the soil. Of special value to the drier sections of the United States. Chinese name *Huang shou tan*."

37005. VIBURNUM FRAGRANS Bunge.

"(No. 1045. December 1, 1913.) A viburnum, flowering in spring before the leaves have fully come out, bearing fragrant white flowers, carried erect as round panicles. Somewhat stiff in outlines. Able to withstand drought and alkali to a fair degree. Of value in the drier sections of the United States. Chinese name *T'an ch'un*."

37006 to 37008.

From Chita, Transbaikalia, Siberia. Purchased from Mr. M. M. Timogowitsch by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received January 20, 1914.

37006. PRUNUS SIBIRICA L. **Apricot.**

Baikal apricot.

37007. BETULA FRUTICOSA Pallas. **Birch.**

This shrub, known to the Tungus as *Buhyka* or *Marak*, abounds in the swamps and stony mountains in the subalpine region of Siberia, especially around Lake Baikal, everywhere associated with *Rhododendron dauricum* L. and always resembling it. Steller observed this same shrub beyond the Lena River, and it is frequent in Kamchatka. This species is very similar to *Betula humilis* of Europe, but the leaves are more tapered toward the apex, have usually five or six pairs of veins, and the toothing is finer, sharper, and more regular; the wings of the seed are also comparatively broader than in *humilis*. It is a native of northeastern Europe and Siberia, inhabiting boggy places. (Adapted from *Pallas, Flora Rossica; Schneider, Laubholzkunde;* and *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 257.*)

37008. MALUS BACCATA (L.) Moench. **Siberian crab apple.**
(*Pyrus baccata* L.)

"Genuine var. *vera*. Transbaikal apple."

"A tree 20 to 40 feet high, forming a rounded, wide-spreading head of branches, the lower ones arching or pendulous at the extremities; trunk 1 to 2 feet in diameter. Leaves 1½ to 3½ inches long, about half as wide; oval or ovate, rounded or tapering at the base, shallowly and bluntly toothed; smooth above, and either smooth or downy beneath; stalks slender, 1 to 2 inches long. Flowers white, produced during April in umbels; each flower 1½ inches across and borne on a slender stalk 1 to 1½ inches long. Fruit three-quarters to seven-eighths of an inch thick, globular, bright red, hollowed at the insertion of the stalk, and with a round scar, but no calyx teeth at the top.

"Widely spread in nature, this species reaches from Lake Baikal, in Siberia, eastward to Manchuria and North China, and the same or a similar tree is found in the Himalayas. Introduced to Kew in 1784. It varies considerably in the downiness of the various parts. Some of the trees in the Kew collection have smooth young shoots, leaves, calyx tube, and flower stalks; others have all these parts downy. The lobes of the calyx appear to be invariably silky hairy inside. As a tree for gardens, the Siberian crab stands in the first rank. It is pretty in April when laden with its abundant white flowers, but its great value and charm are most apparent in autumn, when its plentiful crop of cherrylike crabs turns a brilliant red. They remain long on the leafless branches, and I have seen them lighting up the garden on fine days as late as February. This tree is closely allied to *Pyrus prunifolia*, but the fruit of the latter is more elongated, not indented at the base, and nearly always crowned with the calyx teeth. The late Dr. Regel, about 30 years ago, sent seeds to Kew of about a dozen varieties with names, but when the trees flowered and bore fruit they proved indistinguishable. The fruit of *Pyrus baccata*, although harsh when eaten raw, makes a very excellent jelly." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 278–279.*)

37009 and 37010.

From Puerto Bertoni, Paraguay. Presented by Mr. G. H. Bertoni. Received January 23, 1914.

37009. BAMBOS GUADUA Humb. and Bonpl. **Bamboo.**
(*Guadua angustifolia* Kunth.)

"*Takuara.* Native Paraguayan bamboo. Grows by preference in the low, sandy lands along the rivers. Here reaches a height of 15 to 20 meters, and the culm, which reaches a diameter of 10 to 15 centimeters, is used for pots or jars." (*Bertoni.*)

37010. PHASEOLUS CARACALLA L.

"Climbing legume very similar to *Phascolus caracalla.* In good soils grows to large size. It is annual, with good foliage, and in autumn or late summer is covered with beautiful flowers. Much used as an ornamental. This legume, originating in the warm parts of Paraguay, requires much heat for perfect development. In cold regions it generally flowers well, but does not set seed. This is no inconvenience, since the plant is easily propagated from cuttings." (*Bertoni.*)

Received as *Phascolus bertonii* Franceschi, but apparently merely a form of *P. caracalla.*

37011. CROTALARIA MESOPONTICA Taub.

From Kyimbila, German East Africa. Presented by Mr. Ad. Stolz. Received January 15, 1914.

"The base of the stem somewhat ferruginous-villous, resembling *C. emarginata* Boj., but with the apex of the leaflets obtuse or subcordate, mucronulate, calyx hirsute, villous. From West Karagwe on laterite soil at heights of 1,400 to 1,800 meters." (*Engler, Die Pflanzenwelt Ost-Afrikas, p. 207, 1895.*)

"This plant grows very quickly, might be transplanted for annual or perennial cultivations, as it is a perennial bush and forms a cushion of 2 to 3 feet diameter." (*Stolz.*)

37012. HIBISCUS SABDARIFFA L. **Roselle.**

From Donna, Tex. Presented by Mr. Eltweed Pomeroy. Received January 10, 1914.

"Seed collected from plants grown at Donna, Tex. A showy annual. The young calyces and stems and leaves of the plant when cooked make a delicious jelly, similar to that made from cranberries or red currants. The plant requires a long growing season to reach maturity and is injured by light frosts; therefore it is adapted only to the Tropics or the warmer temperate zones." (*Peter Bisset.*)

37013. ARTABOTRYS UNCINATUS (Lam.) Merrill. **Ylang-ylang.**
(*Artabotrys odoratissimus* R. Br.)

From Gotha, Fla. Presented by Mr. H. Nehrling. Received January 22, 1914.

"A shrub with climbing divaricate branches; young branches slightly pubescent at first, at length glabrous, more or less zigzag; leaves lanceolate or oblong-lanceolate, acuminate, usually acute at the base, glabrous on both sides, glossy and with short, thick petioles, 5 to 10 inches long by 2 to 3 inches broad;

hooked peduncles glabrous, curved downward almost like a spiral, somewhat flattened, usually opposite a leaf, often with the portion of the branch above it more or less aborted, so as to make it appear terminal; calyx three parted, the divisions ovate-acute; petals six, ovate lanceolate, brownish red on the upper part, with broad claws, woolly or pubescent (cotoneux), concave within and constricted between the claws and the limb, the three outer petals about three-fourths of an inch long, somewhat larger than the inner, and relatively broader; ovaries about 8 to 12, gradually tapering upward to the obtuse stigmatic apex, clothed with minute hairs, and containing two basal collateral erect ovules; fruits several, rounded ovoid, abruptly pointed at the apex, nearly sessile, about the size of a walnut inclosed in its hull, at length smooth, lightly punctate, and enclosing two oblong seeds truncated at the base rising side by side from the base, more or less compressed and bearing a marginal groove around the periphery of the hard bony testa. This species was described by Lamarck from specimens collected by Sonnerat in the East Indies and Madagascar. *Artabotrys uncinatus* is frequently planted in the warm regions of the Eastern Hemisphere for the sake of its fragrant flowers." (*W. E. Safford.*)

37014. Ischaemum binatum (Retz.) Buse.
(*Spodiopogon angustifolius* Trin.)

From Calcutta, India. Presented by Mr. D. Hooper, Economic Botanist to the Botanical Survey of India. Received January 23, 1914.

"This grass is a wild plant, chiefly produced by root cuttings from old clumps, and its seeds are thus seldom, if ever, harvested. They have to be produced by special requisition, but the plant is abundant in hilly localities, where the simple cultivators seldom care to depart from their established primitive methods." (*Hooper.*)

"A perennial grass, plentiful in drier tracts of India, from Chota Nagpur and Rajmahal to Nepal and Garhwal, also throughout the plains northward, viz, in the Central Provinces, Central India, and Rajputana to the Punjab, Kashmir, and Afghanistan, ascending to altitudes of 7,000 feet. The grass, from the most ancient times, in the localities where it abounds, has been extensively used for making ropes, string, and mats, and utilized in the construction of rope bridges, and to some extent takes the place of jute in agricultural sacking.

"Sir D. Brandis was the first to recognize that Royle, Wallich, and others were in error in overlooking the grass Ischaemum as the most important, if not the true *bhabar*. Stewart (*Jour. Agri. Hort. Soc. Ind., 1863, xiii, 293*), while acknowledging his indebtedness for this correction, expressed the opinion that the grass should in the future play an important part as a paper material; he was thus apparently the first to suggest that use for the grass. Duthie led to a true identification botanically, and Sir George King pioneered the trade as a paper material. In the Annual Report for the Botanic Gardens of Calcutta for 1893–94, he tells us that he had sent home in 1873 samples of the grass to a paper maker in Scotland, who reported favourably on it, and again in 1877 had furnished the late Mr. Routledge, through the India Office, with a consignment for experiment in Sunderland. Investigations were also made in India from 1882, the first by Mr. Deveria, and finally by the Bally Mills Company (Ltd.) and others, until the grass became firmly established as a paper material.

"The *Kew Bulletin* and the *Indian Forester* have devoted much attention to this subject for some years past, and the Annual Administration Reports of

the Forest Department have recorded the measures taken to foster and extend production. The grass has thus been systematically placed before the public. It has, in consequence, become an assured paper material, restricted alone by the insufficiency of the supply. The attempt has accordingly been made to cultivate the plant in localities more accessible to the paper mills, thereby lowering the ruinously heavy freight charges. More or less successful experiments of this kind have been conducted in Poona, Mysore, Hyderabad Deccan, and in Hyderabad Sind. Systematic cultivation has also been undertaken in Manbhum, Birbhum, and Murshidabad. In Poona it has been announced that the yield is 24 cwt. of dry grass per acre. It was, however, ascertained that when grown on soils of a better class than in its wild habitat or under warmer and moister conditions, it tends to flower too profusely, and this lowers its value as a paper material.

"In Murshidabad, according to Mr. B. C. Bose, assistant director of agriculture, Bengal, it is now planted in clumps along the borders of mulberry fields. Two cuttings are taken in the year, one in September and the other in March. With irrigation, three or four crops can be had. This is, at any rate, the experience in Poona. The March crop is cut after the grass has flowered and yields very inferior fiber. No steps are taken to remove the flower stalks, no doubt owing to the cost of picking them out. The September crop does not flower and yields the best fiber. The people look upon the formation of the flower stalks as a necessary evil which they have no means of checking." (*Watt, Commercial Products of India.*)

Distribution.—The warmer parts of India, ascending to 7,000 feet in the Himalayas and eastward to China and the Philippines.

37015 and 37016. Cudrania javanensis Trecul.

From Taihoku, Formosa, Japan. Presented by the Bureau of Productive Industry. Received January 23, 1914.

37015. Five male plants. 37016. Five female plants.

"The fruit of *Cudrania javanensis* is considered edible in Japan, but not eaten with a relish."

37017 to 37028.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received January 22, 1914.

Quoted notes, except as indicated, by Messrs. Dorsett, Shamel, and Popenoe.

37017. Eugenia luschnathiana Berg. **Pitomba.**

"(No. 45a. December 20, 1913.) A rare and interesting myrtaceous fruit seen in two gardens at Cabulla, near Bahia, and called by the natives *pitomba*. Berg (in Martius, Flora Brasiliensis) gives Bahia as its habitat, but adds that there are other species which produce edible fruits as well, so this may not necessarily be the above species. Seeds from the gardens of Col. Elvidio Esteres Assis and Dr. Fortunato da Silva, Bahia. The tree is 20 to 30 feet in height, compact, densely foliated, and very handsome in appearance. The individual leaves are elliptical lanceolate, acuminate, about 3½ inches in length, thick and leathery, glossy, deep green above, light green beneath. Veins scarcely discernible on the upper surface. The fruits which are produced on the small branches, are broadly obovate in form, about 1 inch in length and seven-eighths of an inch in breadth on an average. The stem is 1 inch or more in

37017 to 37028—Contd. (Quoted notes by Mr. Dorsett and others.)

length, slender. Apex flattened and broad, crowned by the persistent calyx, with four or five green lanceolate sepals one-half inch or more in length. Color of fruit deep orange-yellow, when fully ripe almost bright orange. Skin thin, tender, and easily broken, inclosing a soft melting pulp, bright orange in color, very juicy, and of an acid, very aromatic flavor. The aroma of the fruits themselves is very penetrating. The seeds, normally one in number, but sometimes two, three, or rarely four, are attached to one side of the seed cavity and do not adhere to the flesh. When single the seed is nearly round, slightly less than half an inch in diameter, the seed coat whitish. When more than one, the seeds are hemispherical or angular. The season here is December. The trees which we have seen do not produce as heavy a crop as the *grumichama* or some other myrtaceous fruits, but nevertheless bear fairly abundantly. The fruit is especially esteemed for making jellies and is also used for jams and sherbets, while the negroes relish them when eaten out of hand. The flavor, however, is somewhat acid when they are eaten in this way, and the fruit will probably be of the greatest value for culinary use rather than dessert. The pitomba should be tried in the warmest parts of Florida and California. It seems to be vigorous and easily grown, great numbers of volunteer seedlings springing up around the base of the tree after the fruit has dropped."

For illustrations of the pitomba tree and fruit, see Plates IV and V.

37018. SPONDIAS TUBEROSA Arruda. **Imbu.**

" (No. 46a. December 26, 1913.) Seeds of the *imbu*, from fruits purchased in the Bahia market. This tree is not common here on the coast, but is said to grow profusely on the dry caatinga lands of the interior of Bahia State. The tree is low and spreading in habit, with a dense, umbrageous head of light-green foliage. The leaves are compound, about 6 inches in length. The fruits are oval to nearly round, about 1 inch in diameter on an average, and pale greenish yellow in color when fully ripe. The large, hard seed is surrounded by soft, juicy pulp, of a rather acid flavor, much esteemed when prepared with milk to form the popular *imbuzada*. For trial in California and Florida."

For an illustration of the imbu tree, see Plate VI.

37019. AMBURANA CLAUDII Schwacke and Taub. **Umburana.**

" (No. 47a. December 26, 1913.) *Umburana.* Seed presented by Mr. Gulins Frank, of Conquista, State of Bahia. Said to be a large tree, very common in the interior of that State. The seeds are aromatic and are used by the natives to mix with tobacco."

37020. (Undetermined.)

"(No. 48a. December 26, 1913.) *Fructa de sabão* (soap fruit). Seeds presented by Mr. Gulins Frank, of Conquista, State of Bahia. The ripe fruits are macerated, put in boiling water, and the fat skimmed off as it rises to the surface. The fruit ripens in August and September. The fat is used in place of soap. For trial in California and Florida."

37021. COCOS SCHIZOPHYLLA Mart. **Nicuri palm.**

"(No. 49a. December 26, 1913.) Seeds of the *Nicuri* palm, obtained from trees growing on a hillside at Retiro, near Bahia. For a description of a related species, see S. P. I. No. 36927."

37017 to 37028—Contd. (Quoted notes by Mr. Dorsett and others.)

37022. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

"(No. 50a. December 26, 1913.) *Feijáo fradinho.* Two liters of seed cost 280 reis [9 cents] per liter, at Mercado Novo, Bahia. A cowpea used by the natives as food when cooked. Raised in dry lands of the State of Bahia."

37023. PHASEOLUS VULGARIS L. **Bean.**

"(No. 51a. December 26, 1913.) *Feijão preto* or black bean. Grown on dry lands of the interior of Bahia State. Widely used by the Brazilians to make *feijoada.*"

37024. PHASEOLUS VULGARIS L. **Bean.**

"(No. 52a. December 26, 1913.) *Mulata gorda* bean, bought in Mercado Novo at 240 reis [8 cents] per liter. Name means 'fat mulattress.' Raised on dry lands of the interior of Bahia State."

37025. OPUNTIA sp. **Prickly-pear.**

"(No. 44. December 19, 1913.) Pads of a spineless Opuntia secured from Col. Frederico da Costa's place, Matatu, near Bahia, December 8, 1913. There is a large plant at each corner of the avenue leading from the house to the road. The pads are all free from spines."

37026. EUGENIA UNIFLORA L. **Pitanga.**

"(No. 54a. December 26, 1913.) *Pitanga* seed, from the roça of Dr. Miguel de Teive e Argollo, Roma, Bahai. This plant is already grown in California and Florida to a limited extent, but, so far as we know, its value as a hedge plant is not realized in those States. Here in Bahia it is one of the commonest hedges, and seems to be admirably adapted to this use. Seed to be grown for distributing plants in Florida and southern California on a scale large enough to determine its value as a hedge plant for those regions.

"It can be made a most useful and valuable ornamental plant for gardens, for hedges about gardens, city property, and orange groves; and from the fruit a large number of really desirable ices, jams, and preserves can be made. I like it better than the guava, and the trees and fruits are extremely attractive."

37027. ANACARDIUM OCCIDENTALE L. **Cashew.**

"(No. 55a. December 26, 1913.) Seeds of the *cajú manteiga,* from the island of Itaparica. The name means 'butter caju.' The *cajús* of Itaparica are considered the best in this district, and of all the trees on the island the one which produces the *cajú manteiga* is considered one of the very best. The fruits are extremely large, a beautiful light yellow in color, and of good flavor. Should be tried in Florida."

For an illustration of the cashew fruits, see Plate VII.

37028. ANACARDIUM OCCIDENTALE L. **Cashew.**

"(No. 57a. December 26, 1913.) Seeds of particularly large and fine specimens of *cajú amarella,* or 'yellow caju,' from Itaparica. See notes under 55a [S. P. I. No. 37027]. For trial in Florida."

37029. PUNICA GRANATUM L. **Pomegranate.**

From Algiers, Algeria. Presented by Mr. Bernard G. Johnson. Received January 23, 1914.

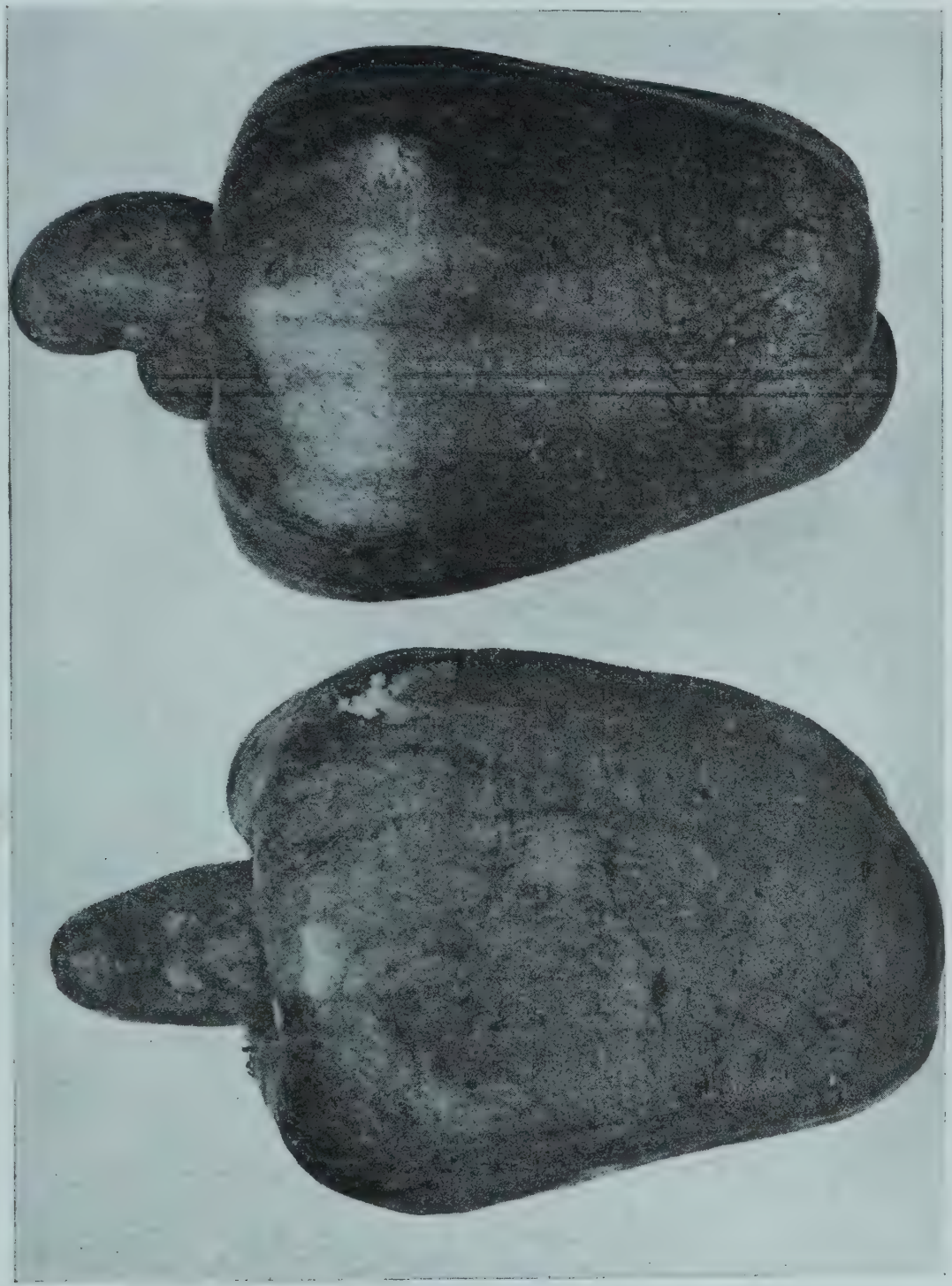
"Pomegranate cuttings from the Algerian oasis, Laghouat. I found these pomegranates of exceptionally fine flavor." (*Johnson.*)

THE PITOMBA TREE OF BRAZIL (EUGENIA LUSCHNATHIANA), S. P. I. No. 37017.

A tropical fruit tree of the myrtle family which deserves to be tested in Florida and southern California because of its value as an ornamental and fruit tree, bearing remarkably attractive, rich orange-yellow fruits about the size and shape of a small Seckel pear, with long persistent sepals. (Photographed (P14549FS) by Dorsett, Shamel, and Popenoe, Bahia, Brazil, December 20, 1913.)

AN OLD IMBÚ TREE (SPONDIAS TUBEROSA) AT BREJO, BRAZIL, S. P. I. NO. 37018.

The cattle browse on the lower branches of the imbú and the ground underneath is often carpeted with the plumlike juicy fruits, which are pale greenish yellow in color and of an acid taste. A popular drink called imbuzada is prepared by mixing the pulp with milk. (Photographed (P14830FS) by Dorsett and Popenoe, February 14, 1914.)



FRUITS OF THE CASHEW (ANACARDIUM OCCIDENTALE), S. P. I. No. 37027.

A single tree of this large-fruited variety, which is known as the butter cashew (*caju manteiga*), occurs on the island of Itaparica, off the coast of Bahia, Brazil. Although it has a good deal of fiber it is exceedingly juicy and beautifully colored. The cashew is popular as a table fruit in Brazil. The cashew nut, one of the best table nuts known, is contained in the kidney-shaped end of the fruit. It is surrounded by a layer of cells containing a very poisonous juice which produces an eruption like that caused by poison ivy, but being volatile this is driven off when the nuts are roasted. (Photographed (P15403FS) by Dorsett, Shamel, and Popenoe, Bahia, Brazil, December 24, 1913. Natural size.)

RHEEDIA EDULIS A WILD RELATIVE OF THE MANGOSTEEN, S. P. I. No. 37384.

This small, very handsome tree is known in the region around Lavras, Brazil, as the Limão do matto, or wild lemon, because of the appearance and acid taste of its bright-yellow juicy fruits, which are eaten out of hand and also preserved. It may prove a stock for the mangosteen. (Photographed (P14643FS) by Dorsett and Popenoe, Lavras, Brazil, January 12, 1914.)

37030. PANICUM MAXIMUM Jacq. **Guinea grass.**

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, Agricultural Experiment Station. Received January 23, 1914.

37031. HORDEUM VULGARE L. **Barley.**

From Aleppo, Syria. Presented by Mr. Jesse B. Jackson, American consul. Received January 23, 1914.

"Black barley. The grain is very hard, and it is claimed that it will resist insects for five or six years if kept in dry places." (*Jackson.*)

37032 and 37033.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, governor. Received February 3, 1914.

37032. MUSA sp. Banana.

37033. COLOCASIA sp. Taro.

Plants.

37034. MYRCIARIA CAULIFLORA (Mart.) Berg. **Jaboticaba.**

From Rio de Janeiro, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received February 2, 1914.

"(No. 19a. November 4, 1913.) Seeds from about 40 pounds of fruits purchased in the public market at a cost of 5 milreis (about one dollar) for the lot. The fruit appears to be of an entirely different type from those the seed of which was sent in under S. P. I. Nos. 36702 and 36709, suggesting that they may even be distinct species, since there are two or more species of Myrciaria in Brazil known under the common name of jaboticaba. The fruit of this variety is uniformly round or slightly oblate in form and variable in size, the best specimens being slightly less than 1 inch in diameter and of about the same length. The skin is smooth and glossy, deep purplish maroon in color over the entire surface. The pulp is very juicy and of pleasant vinous flavor. Seeds one to four, two being the commonest number in good-sized fruits. For further data concerning the jaboticaba, see notes under S. P. I. No. 36702." (*Dorsett, Shamel, and Popenoe.*)

37035. PERSEA AMERICANA Miller. **Avocado.**

(*Persea gratissima* Gaertn. f.)

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão, through Mr. A. D. Shamel, of the Bureau of Plant Industry. Received January 22, 1914.

"Dr. Argollo secured from a friend of his near Bahia a lot of avocado fruits, typical of the best commercial variety, for experimental shipment to New York. These fruits were packed in a tight box and upon arrival in Washington in February, 1914, the fruits were examined for commercial condition. While some of the fruits were found to have carried through the voyage from Bahia to Washington in good condition, most of them were affected by a species of Colletotrichum. This development interfered with the quality of the fruit, so that a satisfactory judgment as to its comparative commercial value was not possible. The fruits were rather pear shaped, with fairly large seeds and a hard rind. The meat was yellowish white and about half an inch in thickness around the seed. The color of the rind was green. The size of the fruits was about 5 to 6 inches long and from 2½ to 3 inches in maximum diameter. Dr. Argollo did not know of any local name for this variety, except the name avocado." (*Shamel.*)

37036 to 37058.

From Fusan, Chosen (Korea). Presented by Rev. George H. Winn, Presbyterian Mission. Received January 28, 1914.

Quoted notes by Mr. Winn.

"The white beans are the ones that are generally raised. In the cultivation of the beans they are generally planted in rows about 2 feet apart, sometimes a little wider, and are well fertilized. Needless to say the weeds are kept down by hand hoeing three or four times during the summer. The beans are planted here in May or early in June and harvested in November as a rule, though even in October we occasionally see the harvesting of the beans in specially well-favored places. The harvesting is entirely done by hand (as is all farm work except plowing) after which the beans are carried to the thrashing floor, where they are thoroughly dried in the sun and thrashed by the flail."

37036 and 37037. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

37036. "No. 1. *Yulgochi* bean. Very hardy, will grow and produce where the ordinary beans will not amount to much."

37037. "No. 2. *Kambool*. Very commonly found in the markets."

37038 and 37039. PHASEOLUS ANGULARIS (Willd.) W. F. Wight.
Adzuki bean.

37038. "No. 3. The gray bean; very hardy, will grow and produce where the ordinary beans will not amount to much."

37039. "No. 4. The white-eye black bean; carefully cultivated and given sufficient fertilizer."

37040 to 37055. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

37040. "No. 5. Brown mottled bean; carefully cultivated and given sufficient fertilizer."

37041. "No. 6. Brown. Planted around the edges of the rice fields or where there is a small corner that can be utilized, they are very hardy and will grow and produce where the ordinary beans will not amount to much."

37042. "No. 7. Large white-eyed bean; carefully cultivated and given sufficient fertilizer."

37043. "No. 8. Large green bean. The larger beans are all carefully cultivated and given sufficient fertilizer."

37044. "No. 9. Black mottled brown bean. As a rule, the smaller beans are planted around the edges of the rice fields or where there is a small corner that can be utilized. They are very hardy and will grow and produce where the ordinary beans will not amount to much."

37045. "No. 10. White mottled black bean; carefully cultivated and given sufficient fertilizer."

37046. "No. 11. Ordinary green bean. As a rule, these beans are planted around the edges of the rice fields or where there is a small corner that can be utilized. They are, however, often planted

37036 to 37058—Continued.

in fields. They are very hardy and will grow and produce where the ordinary beans will not amount to much."

37047. "No. 12. Brown mottled bean; often planted around the edges of rice fields and where there is a small corner that can be utilized; very hardy and will grow and produce where ordinary beans will not amount to much."

37048. "No. 13. Large blue bean; carefully cultivated and given sufficient fertilizer."

37049. "No. 14. Large black bean; carefully cultivated and given sufficient fertilizer."

37050. "No. 15. Small black bean; grown around the paddy fields. It is cultivated in larger areas because it is supposed to be extra nourishing, and some seem even to suppose it has medicinal properties, but I fear there is not much to it."

37051. "No. 16. The larger beans are all carefully cultivated and given sufficient fertilizer."

37052. "No. 17. The red bean; carefully cultivated and given sufficient fertilizer."

37053. "No. 18. Black mottled yellow. Small beans which are planted around the edges of the rice fields or where there is a small corner that can be utilized; very hardy and will grow and produce where the ordinary beans will not amount to much."

37054. "No. 19. Maroon bean. One of the larger beans, all of which are carefully cultivated and given sufficient fertilizer; but this is not very commonly found."

37055. "No. 20. Ordinary white bean. One of the larger beans; carefully cultivated and given sufficient fertilizer."

37056. PHASEOLUS AUREUS Roxb. **Mung bean.**

"*Green pot* bean. It is very closely allied to the soy bean, but is not used in making soy as far as I know. It is used in making cakes and candies. It is also eaten with rice, being cooked with it. It is often used for invalids' food, being cooked and strained and made into a sort of gruel."

37057 and 37058. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

37057. "*Red pot* bean. The pot bean is very closely allied to the soy bean, but it is not used in making soy as far as I know. It is used in making cakes and candies. It is also eaten with rice, being cooked with it."

37058. "*White pot* bean. This variety is very rarely seen."

37059. PERSEA AMERICANA Miller. **Avocado.**

(*Persea gratissima* Gaertn. f.)

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, governor. Received February 6, 1914.

37060. PHOENIX DACTYLIFERA L. **Date.**

From Cairo, Egypt. Procured by Mr. S. C. Mason, of the Bureau of Plant Industry. Received January 29, 1914.

"*Saidy* date. Purchased in the market at Abshawai. These dates were sold simply as *Wahi*, or 'desert' dates, to the village merchants, who do not concern themselves about desert names. The trader said they were *Saidy* and were brought from the oasis of Baharieh, four days' journey, with camel." (*Mason.*)

37061. PERSEA AMERICANA Miller. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Honolulu, Hawaii. Presented by the Hawaii Agricultural Experiment Station. Received February 2, 1914.

"No. 1454. A chance seedling about 15 years of age; origin unknown. Form pyriform; size small to medium, cavity shallow and somewhat abrupt; stem medium long and quite thick; surface undulating, hard, coriaceous, and slightly pitted and mottled; color green, with small, very abundant yellowish dots; apex a depressed dot; skin quite thin, separating fairly well from the pulp; flesh yellow, running into green at the rind, fine grained, oily, and somewhat buttery, 60 per cent of the fruit; seed very large, conical, fitting loosely in the cavity; flavor rich and nutty. Season, September to January. This tree is very vigorous and symmetrical. Height, 25 feet; spread, 25 feet." (*Higgins, The Avocado in Hawaii.*)

37062 and 37063. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

From Harbin, China. Presented by Mr. Southard P. Warner, American consul, at the request of the American consul at Newchwang. Received February 5, 1914.

See report on the "Soya Bean of Manchuria," 1911.

37062. Grown south of Harbin. 37063. Grown north of Harbin.

37064. CAMPOMANESIA OBVERSA (Miq.) Berg. **Guadiloba.**

From Asuncion, Paraguay. Presented by the Museum of Natural History. Received January 28, 1914.

"Branching shrub, leaves obovate to lanceolate-oblong, membraneous, puberulent above, pubescent below, peduncle solitary, opposite, 1-flowered. Called *Guadiloba* by the natives in the Province of Minas Geraes, where it is common." (*Martius, Flora Brasiliensis, vol. 14, pt. 1, p. 445.*)

37065 to 37068.

From Buitenzorg, Java. Presented by Dr. C. J. J. Van Hall, Department of Agriculture. Received January 26, 1914.

37065. CROTALARIA QUINQUEFOLIA L.

Distribution.—An erect annual found in India and eastward through the Malay Archipelago to the Philippines.

37066. STIZOLOBIUM VELUTINUM (Hassk.) Piper and Tracy (?).

37067. INDIGOFERA TINCTORIA L. **Indigo.**

37068. INDIGOFERA HIRSUTA L.

Annual or biennial, suberect, reaching 2 to 4 feet high, the pubescence gray or brown. Leaves short petioled, 2 to 5 inches long; leaflets mem-

37065 to 37068—Continued.

braneous, gray-green, glaucous below, reaching 1 to 2 inches long, densely coated with adpressed hairs; stipules setaceous, plumose. Racemes short peduncled, very dense, 2 to 6 inches long. Calyx one-eighth inch, densely pubescent, teeth setaceous, long, plumose, corolla red, not much exserted. Pod one-half to three-fourths of an inch long, densely clothed like the branches. This species is distributed over tropical Africa, tropical America, Java, Philippines, and north Australia. In India on the plains from the Himalayas (ascending to 4,500 feet in Kumaon) to Ceylon, Ava, and Tenasserim. It flowers during the rainy and cold seasons. (Adapted from *Hooker, Flora of British India, vol. 2, p. 98,* and *Roxburgh, Flora Indica, vol. 3, p. 376.*)

37069 to 37083.

From Tientsin, China. Presented by Dr. Yamei Kin, Peiyang Woman's Medical School and Hospital. Received February 6, 1914.

Material as follows; quoted notes by Dr. Kin, except as indicated.

37069. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"Bud wood of the *Ya hu tsao*, 'gourd-shaped jujube,' so named on account of the shape of the fruit, which has a constriction in the middle like a gourd. The fruit is said to be large, measuring from 2½ to 3 inches, and is of sweet flavor and crisp texture. Chihli Province."

37070. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"From Chihli Province. *K'ang tsao.* The very large ones that I spoke of before, of which it took but seven or eight to make a catty. I trust that you will find this bud wood clean, for they say that the *tsao* trees are singularly free from pests. The insects that disturb them apparently confine their labors chiefly to the leaves."

37071. PYRUS sp. **Pear.**

"Bud wood of the *Pan chin li*, 'half catty pear,' so called on account of the large size and good flavor; when well grown two will weigh on an average a catty. It is said to require the yellow earth on a mountain slope for the best development. The flesh is fine and white."

37072 and 37073. PRUNUS ARMENICA L. **Apricot.**

"To be grown in yellow earth which is hot in the daytime, but at night draws moisture from the depths and shows a good dewfall. A mountain slope protected from early cold winds in spring is the favorite locality."

Bud wood.

37072. "*Pai hsiang hsing êrh*, 'white fragrant apricot' from Chihli Province. The wood apparently makes very slow growth, for you will perhaps notice that though the branches I send are short, yet there are slight divisions, showing that they are of three years' growth. The directions say to get the wood for budding of one year's growth, but even at three years the branches are to my mind remarkably short. The buds are nice and fat, and the Chinese say they just graft the whole stem in rather than merely bud it."

37069 to 37083—Continued. (Quoted notes by Dr. Yamei Kin.)

37073. "White apricot, round late variety, from Chihli Province."

37074 and 37075. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

37074. "*Yüch ya tou*, literally 'moon-tooth' bean, so called from the edge of the green peeping outside of the black thick skin like the crescent moon in the sky. Is largely used for making bean sprouts, which they say requires a bean that is not mealy or farinaceous, as that kind becomes mushy in the process of germination and has no taste left. Also is good for feeding animals, requiring to be lightly steamed before feeding, not boiled, for then the oil escapes and the flavor is lost. This kind is valued for its oil, which it contains in a great amount, and for making bean curd. This must be grown in a well-drained clay soil; black or moist earth will not do."

37075. "*Cha tou.* Specially used for making bean curd and bean sprouts."

37076. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

"*P'a tou.* A mealy, farinaceous bean just to cook in the ordinary way."

37077. SOJA MAX (L.) Piper. **Soy bean.**

"*Huang tou.* Used for making bean curd as well as starch and vermicelli."

37078. PHASEOLUS AUREUS Roxb. **Mung bean.**

"*Lü tou.* This makes a better quality of starch than anything else. It is curious that in China starch for laundry purposes obtained from maize or wheat is not valued so highly as that made from this bean. Vermicelli is also made from the starch of this bean, and one can at once distinguish it from that made from ordinary starch by the fact that it keeps its clearness and shape much better, no matter how much it is boiled. It also has a better flavor and good keeping qualities. Perhaps it might be an addition to the laundry starches of America, as I fancy it would take a much better gloss, as it is harder than the ordinary starch and would not need so much paraffin added to make a gloss. I doubt if the American palate would care for the vermicelli; it is clear, like glass, and the long strings are surpassingly slippery to eat, worse than the round Italian spaghetti."

37079. PHASEOLUS VULGARIS L. **Bean.**

"*Hung yün tou.* Though the bean itself can be eaten, it is usually used with the pod and all, like a string bean, and it is prized generally for its long bearing qualities, producing, once it begins, for three months at least."

37080. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

"*Ching tou.* Used only for the oil expressed and fodder purposes."

37081. DOLICHOS LABLAB L. **Bonavist bean.**

"*Kuan tung ching.* (The Manchurian peninsula is often spoken of as the Kuan tung district.) The common name is 'old-woman's-ear,' and it is a specialty at the north. The ripe beans can be used like any other

37069 to 37083—Continued.

beans, but are generally used in the pod like string beans. As it grows readily and likes the cold weather, just so that the blossoms do not actually freeze, it thus provides a green bean when the other string beans are gone. In cooking, the object is not to make it soft, but just to plunge it into boiling hot water and not much more than scald it, so that it still remains crisp enough for salad; then it is dressed with vinegar and oil. It should be grown on a trellis. The pods when full grown measure from 4 to 6 inches in length and about 2 inches across; people do not generally wait till it is full grown, but begin to eat it when young, so that the whole pod can be used."

37082 and 37083. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) **Sorghum.**

37082. "Brown kaoliang. Apparently identical with Redstem, S. P. I. No. 22011 (C. I. No. 327), except the peduncle is not red." (*C. R. Ball.*)

37083. "These white varieties go by the common name of 'Stepgrandma White.' Exactly why they should be called 'Stepgrandma' I do not know as yet; possibly I shall hear the legend of it sometime later when I go to the place myself. Used largely for human consumption. Grows to a height of 20 feet."

"Blackhull kaoliang. Undoubtedly the same as Brill Blackhull (Agrost. No. 1442), S. P. I. No. 6710 (Agrost. No. 1457), S. P. I. No. 17920 (C. I. No. 120)." (*C. R. Ball.*)

37084. CITRUS sp. Lime.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received January 31, 1914.

"*Sylhet* or *Rungpur*. It is one of our oldest varieties; our oldest catalogue, dated 1854, mentions it. I can not even ascertain why the name of *Sylhet* or *Rungpur* is given to it. These are distinct places in India, and widely apart. It is a very hardy tree, and makes good hedges, always productive and ornamental. I have extracted and kept its juice and found it refreshing, but the natives do not care for it, as it is too sour for them. They use it very largely, however, for softening leather. It forms a part of the daily supply of fruits, as it is used so much for our boots and cleaning. It comes true from seed." (*Hartless.*)

37085 to 37089. LINUM USITATISSIMUM L. Flax.

From Addis Abeba, Abyssinia. Received through the British Legation at that place January 31, 1914.

Quoted notes by Capt. D. A. Sandford.

"Flax (local name, *talba*) grows in most parts of Abyssinia. It is usually sown in July and reaped in November. The natives use it for cooking purposes and its oil also medicinally as a laxative. The general price of the seed is 25 pounds to the dollar (Maria Theresa), but the white variety is preferred to the others and is slightly more expensive."

37085. "Black. From Mundjar, 40 miles east of Addis Abeba. Requires a warmer climate than other varieties."

37086. "White. From Soddo, 25 miles south of Addis Abeba."

37085 to 37089—Con. (Quoted notes by Capt. D. A. Sandford.)

37087. "Dark red. From Boulga, 40 miles northeast of Addis Abeba."

37088. "Black and white. From Soddo, 25 miles south of Addis Abeba. It is sown mixed."

37089. "Red. From Metcha, 40 miles west of Addis Abeba."

37090 to 37095.

From Rio de Janeiro, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received February 5, 1914.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37090. MYRCIARIA JABOTICABA (Vell.) Berg. (*Myrcia jaboticaba* Baill.) **Jaboticaba.**

"(No. 58a. January 5, 1914.) Seeds from a batch of fruits purchased in the market here. The presence of a short stem on the fruit leads to the belief that they are of the species *Myrciaria jaboticaba* and not *M. cauliflora*, of which seeds have already been sent in. The size is variable, the best specimens being about 1 inch in diameter. Color dark purplish maroon. The skin seems a little tougher than the *M. cauliflora* and the flavor is more acid and not quite so pleasant. Seeds normally four, rarely one, two, or more commonly three."

37091. OCOTEA REGELIANA (Meissn.) Mez.

"(No. 59a. January 6, 1914.) Seeds from a tree growing on the hillside above the Hotel Internacional. Slender in form, about 30 feet high, leaves light green, stiff, somewhat glossy, elliptical acute, 2½ to 3 inches long. Fruits oval, three-fourths of an inch long, purplish black, glossy, with a woody calyx. Pulp one-eighth of an inch thick, bluish purple."

37092. GARCINIA sp.

"(No. 60a. January 6, 1914.) Seeds from a tree in the Jardin Botanico bearing the number 54. We believe that this species has already been introduced into the United States, but are sending a few seeds for possible use in connection with the mangosteen experiments."

37093. OCOTEA sp.

"(No. 61a. January 6, 1914.) Seeds of an arborescent shrub growing on the hillside west of the Hotel Internacional. Leaves deep green, thick, oblong-lanceolate, acuminate, 3 to 4 inches in length. For trial as an ornamental in Florida and southern California."

37094. MYRCIARIA EDULIS (Vell.) Skeels. (*Eugenia edulis* Vell.) **Cambucá.**

"(No. 62a. January 6, 1914.) Seeds of the *cambucá*, from fruits purchased in the market. A very interesting myrtaceous fruit, closely resembling in foliage and general character of fruit the jaboticaba. Leaves lanceolate-elliptical, acuminate, deep green above, lighter green beneath, 4 to 5 inches long. Fruits oblate in form, 2 inches in width and 1½ inches long, sessile, surface smooth, bright orange-yellow in color (Code de Couleurs 156). Skin thin, outer flesh one-fourth of an inch thick, tough and acid, inner pulp or edible portion surrounding the seed about the same thickness, soft, translucent, juicy, of average subacid flavor, somewhat resembling that of *Passiflora edulis*. Seed oval, compressed laterally, one-eighth of an inch long. For trial in Florida and California."

37090 to 37095—Continued.

37095. BACTRIS CARYOTAEFOLIA Mart. **Palm.**

"(No. 68a. January 6, 1914.) Seeds from palm fruits bought in the market, where they are called *sucum* (*tucum?*). The thin pulp surrounding the seed is edible, rather acid in flavor. Fruits black, about three-quarters of an inch in diameter. For trial in Florida and California."

37096 to 37099.

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received February 5, 1914.

37096 and 37097. COLOCASIA ESCULENTA (L.) Schott.

37096. "Green *yama*." 37097. "Purple *yama*."

37098 and 37099. XANTHOSOMA sp.

37098. "Green *taya*." 37099. Purple *taya*."

"The quality of the tubers of these *yamas* and *tayas*, as grown at the Plant Introduction Field Station, Brooksville, Fla., in 1914, was very poor, and the varieties will be of interest mainly for botanical study." (*R. A. Young.*)

37100 to 37102. ECHIUM spp.

From Santa Ursula, Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received January 26, 1914.

37100. ECHIUM PEREZII Sprague.

An erect plant, 2 meters high, resembling *Echium wildpretii* in its silky leaves, rose-colored corolla, and long exserted straight filaments, which radiate regularly from its mouth, but differing from that species in the broad lax inflorescence and longer style arms. A recently discovered species from Punta Llana and Barranco del Agua, Punta, Canary Islands, sent to Kew by Dr. George V. Perez, for whom the species is named. (Adapted from *Kew Bulletin, 1914, pp. 210 and 267.*)

37101. ECHIUM PININANA Webb and Berth.

"A very rare plant indeed." (*Perez.*)

For previous introduction and description, see S. P. I. No. 32263.

37102. ECHIUM WILDPRETII Pearson.

For previous introduction and description, see S. P. I. No. 35097.

37103. DURIO ZIBETHINUS Murray. **Durian.**

From Singapore, Straits Settlements. Presented by Mr. I. Henry Burkhill, Botanic Gardens, Singapore. Received February 6, 1914.

See S. P. I. No. 28082 for previous introduction.

"Civet-cat fruit. A very large, handsome, pyramid-shaped tree, native of the Malayan Archipelago, and commonly cultivated in the Straits, Burma, Java, etc., for the sake of its celebrated fruit. The latter is produced on the older branches, varies somewhat from round to oval in shape, and usually weighs from 5 to 7 pounds or more. It is armed with thickly set, formidable prickles about one-half inch long; when ripe it becomes slightly yellow, and possesses an odor which is intensely offensive to most people, especially on first acquaintance with it. The cream-colored pulp surrounding the seed is the edible portion; this is most highly prized by the Malays and other oriental people, and is also relished by Europeans who acquire a taste for it. Firminger describes it as

'resembling blancmange, delicious as the finest cream,' whilst Mr. Russell Wallace considered that 'eating durians is a sensation worth a voyage to the East.' The large seeds may be roasted and eaten like chestnuts. Pounded into flour, they are said to be sometimes made into a substance like 'vegetable ivory.' The durian tree thrives in the moist low country of Ceylon up to 2,000 feet elevation, and luxuriates in deep alluvial or loamy soil. In Peradeniya gardens there are magnificent specimens well over 100 feet in height. They usually flower in March and April, and the fruit is ripe in July or August. Durian fruits are variable in size, shape, flavor, and quantity of pulp, according to variety. The trees also vary in productiveness, some varieties being almost barren. Selection and high cultivation should, therefore, be practiced in order to obtain the best fruits. The tree is readily propagated by seed if sown fresh; the seed is of short vitality and germinates in seven to eight days." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

37104 to 37116.

From Zaria, Northern Nigeria, Africa. Presented by Mr. K. T. Rae, Department of Agriculture. Received February 4, 1914.

Quoted notes by Mr. Rae.

37104 to 37111. VIGNA SINENSIS (Torner) Savi. **Cowpea.**

37104. "No. 1. *Dariya amariya* (Hausa name). These are grown, though not extensively, in the pagan districts of this province."

37105. "No. 2. *Hunum marini* (Hausa name). These are grown though not extensively, in the pagan districts of this province. They were experimented with for the first time this year, and under unfavorable conditions, with a rainfall of only 27.9 inches, about 5 inches below the average, this variety proved to be the second best yielder, giving 41 pounds per acre."

37106. "No. 3. *Zaria wake* (Hausa name)."

37107. Red. Selected from No. 3. *Zaria wake.*

37108. Spotted. Selected from No. 3. *Zaria wake.*

37109. "No. 4. *Saka-baba-sata.* These cowpeas were experimented with for the first time this year, and under unfavorable conditions, with a rainfall of 27.9 inches, about 5 inches below the average, this variety proved to be the best yielder, giving 56 pounds per acre."

37110. "No. 5. *Farin wake* (Hausa name)."

37111. (No data.)

37112. PHASEOLUS LUNATUS L. **Lima bean.**

"No. 1. Small black and white bean. Edible climbing bean."

37113. PHASEOLUS LUNATUS L. **Lima bean.**

"No. 2. Large pure white bean. Edible climbing bean."

37114 to 37116. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

37114. "No. 1. Locality, Kano. Local name *Kaura.* One of the most common varieties grown here, both for human consumption and for stock."

37104 to 37116—Continued.

37115. "No. 2. Locality, Kano. Local name *Fara fara.* One of the varieties most commonly grown here, both for human consumption and food for stock."

37116. "No. 3. This variety is grown in much smaller amounts and the grain, as will be seen, is a very poorly developed one. This fact would seem to support the statement made on page 146 of Dudgeon's 'Agricultural Products of British West Africa,' i. e., that the stem is particularly rich in saccharine juice and that this variety is mainly used as a cattle food."

37117. ANNONA CHERIMOLA Miller. Cherimoya.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 30, 1914.

"*Jara.* Fruit tree; hot climate." (*Wercklé.*)

37118. CARICA PAPAYA L. Papaya.

From Angola, Africa. Presented by Rev. W. P. Dodson. Received January 26, 1914.

"Seeds that are acclimatized here for a generation. It is not the United States variety, but rather that of South America, and is a most delicious soft fruit that grows abundantly. It ought to grow in southern Florida or southern California, quite south (Imperial Valley)." (*Dodson.*)

37119 to 37121.

From Buitenzorg, Java. Presented by the Department of Agriculture. Received January 29 and February 6, 1914.

37119. CASUARINA SUMATRANA Jungh.

"Introduced as a better style of *Casuarina,* forming a large and more graceful tree than *C. equisetifolia,* used so commonly as a street tree in Florida." (*Fairchild.*)

"A shrub which in greenhouse cultivation may attain a height of 1½ meters or more, excessively branched. Branches spread out, elegantly bent down by the weight of the twigs. Branches, twigs, and little twigs are three cornered, very thin, destitute of leaves, gracefully arched, sometimes pendent, forming by their union plumy masses or a kind of foxtail, the whole of a deep shining green. Few plants are prettier, and above all more suitable for commercial ornamentation, either for bouquets or decorations for ballrooms. This species has a considerable number of thin twigs, which give to the whole an excessive lightness which can be compared to the marabous employed for decorating headdresses. Another advantage yet which these twigs present is that, being completely destitute of leaves, and owing their plumy lightness to the delicacy of the different parts, they retain their ornamental character for a very long time, which does not take place when this character is due to the leaves. This species is cultivated in a light and firm mixture consisting of vegetable mold and peat, to which is added a small quantity of very sandy soil, in pots well drained and relatively large. However, a better way is to cultivate them in the ground in a hothouse, or, at the least, in a good temperate house. Then the plants are very hardy and one can, at need, cut off the branches to make bouquets or other forms of ornamentation.

37119 to 37121—Continued.

It goes without saying that, cultivated in pots, this species will serve in the decoration of apartments, in the filling of jardinieres, etc." (*E. A. Carrière in Revue Horticole, 1889, p. 467.*)

37120. COIX LACRYMA-JOBI L. **Job's-tears.**

For a detailed account of this crop plant, see the Agricultural Ledger, 1904, no. 13.

37121. CORDIA SUAVEOLENS Blume.

A large boraginaceous tree up to 60 feet in height, with alternate, variable leaves, equal or unequal at the base, acute or slightly obtuse, rotund elliptic or narrowly ovate, papery, hairy in the axils of the nerves; flowers small and white in terminal or axillary cymes. (Adapted from *Koorders and Valeton, Mededeelingen uit 'sLands Plantentuin, vol. 42, p. 69, 1900.*)

37122 to 37124. CARICA PAPAYA L. **Papaya.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 31, 1914, in three separate packets, but without varietal names or descriptions.

37125. GOSSYPIUM BARBADENSE L. **Cotton.**

From Angola, Africa. Presented by Rev. W. P. Dodson. Received January 26, 1914.

"I have often thought of how highly Egyptian cotton has been spoken of and thought you would like to try some from Angola. As the natives make it up it is very strong. The truth is, that even the natives prize these seeds they are so scarce, owing to the fact that it is practically a wild plant. This cotton is very strong. A single thin cord of it is used by the native to sew up his cloth or mulele. Many old men are found spinning, and ten years ago a few used to weave, but weaving is now almost a lost art. I have in America a sample of the cloth, about four yards of it, sewed together. It is coarse, but good and very strong work. When a native has such a cloth it lasts him for as long as ten years." (*Dodson.*)

37126. CHAYOTA EDULIS Jacq. **Chayote.**

From Altadena, Cal. Procured from the West India Gardens. Received February 7, 1914.

Secured for experimental work at one of the plant introduction field stations.

37127. CRATAEGUS PINNATIFIDA Bunge. **Hawthorn.**

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received February 10, 1914.

See S. P. I. No. 35456 for previous introduction and description.

37128. FURCRAEA ELEGANS Todaro.

From La Mortola, Ventimiglia, Italy. Presented by Mr. Alwin Berger, curator of the garden. Received February 9, 1914.

"This is one of the seventeen species of the genus Furcraea, succulent desert plants from Central America and particularly from Mexico. The perianth is whitish and wheel shaped. The cushions have a swelling at the base, in which respect it differs from Agave, a genus bearing a somewhat close resemblance.

The species of Furcraea are cultivated in much the same way as those of Agave except that the former are given more heat and water. As a rule, Furcraeas bear fruit not more than once and then die without producing suckers. They do, however, produce when in flower an immense number of bulbils which may be used for propagation. It is impossible to say at what size or age the plant will bloom. Grown in pots they may take a century. On the other hand, plants from bulbils have been known to flower in three years. The leaves of *F. elegans* measure 4 to 5 inches at the broadest part and 3 inches above the base. They are rough on the back and are armed with large prickles. The peduncles are from 20 to 25 feet long. The branches are slightly compound and the panicles often reach from 10 to 12 feet." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

Bulbils.

37129 and 37130.

From Lal Bagh, Bangalore, India. Presented by Mr. G. H. Krumbiegel, economic botanist, Mysore Government Botanical Gardens. Received February 9, 1914.

37129. BAMBOS sp. **Bamboo.**

This was received in response to a request for "bamboo rice" listed in the Official Handbook of Exhibits of the Mysore Dasara Industrial and Agricultural exhibition, 1911, among the rices, with the description: "*Kiri bidari* rice (bamboo rice). This is prepared out of bamboo paddy which is grown in the bamboo trees once in 60 years. This is used as food by the poor during distress and also used as medicine for those that are suffering from enlargement of the spleen."

37130. ORYZA SATIVA L. **Rice.**

"*Kembuti bhatta.*"

37131. GARCINIA MULTIFLORA Champion.

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received February 9, 1914.

An opposite-branched clusiaceous shrub, with entire, ovate or obovate, short-stalked, thick leaves, 3 to 3½ inches long, and terminal corymbs of 4-petaled flowers. Common toward the Black Mountain, Hongkong, flowering in the heat of summer. (Adapted from *Bentham, Flora Hongkongensis, p. 25, 1861.*)

37132 and 37133. CUCURBITA PEPO L. Squash.

From Rome, Italy. Presented by Dr. Gustav Eisen. Received February 9, 1914.

"*Zucchetta.* A peculiar kind of squash. This squash is eaten green and while the flower is yet adherent to the fruit, and never when the fruit is ripe, at least I have never seen it eaten at that stage. Used stewed, fried, etc., in many different ways, like squash or green peas. It is most delicious when boiled in fresh butter and is fully equal to tender green peas, though of a different flavor. I prefer *zucchetta* to any other fresh vegetable in this country. Many eat the flowers when the new fruit is not more than 1 or 2 inches long, though generally they are sold when the fruit is between 6 and 10 inches, always while green." (*Eisen.*)

37132. "*Zucchetta nana, 'Cerbero.'*"

37133. "*Zucchetta nana, 'Romana.'*"

37134 to 37144.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, Botanic Gardens, through Dr. E. C. Joss, Portland, Oreg. Received February 4, 1914.

37134. BARKLYA SYRINGIFOLIA Mueller. **Gold-blossom tree.**

This is the only species of a genus belonging to the section of the pea family bearing regular flowers. It is a large tree, with alternate simple coriaceous leaves, which have long stalks, and are in form like those of the lilac (Syringa), but have seven radiating nerves. The flowers are golden yellow, very numerous, and disposed in axillary or terminal racemes. The pods are stalked, about half an inch long, thin, containing few seeds. The plant is a native of eastern Australia, and is found near the Brisbane River. It is commonly known as the *Queensland gold-blossom* tree. The wood is hard, close grained, of a blackish gray color, and might be suitable for tool handles. The tree is, however, of greater value to the horticulturist than to the timber merchant, its pleasant foliage and luxuriant yellow flowers rendering it a pretty object in the gardens. Diameter, 12 to 15 inches; height, 40 to 50 feet. (Adapted from *Lindley, Treasury of Botany; Maiden, Useful Native Plants of Australia, p. 384;* and *Guilfoyle, Australian Plants, p. 70.*)

37135. BAUHINIA HOOKERI Mueller.

"This is a large tree, with a spreading head, usually quite glabrous. Leaflets quite distinct, very obliquely and broadly ovate or obovate, very obtuse, three-fourths of an inch to 1½ inches long, finely 5 to 7 nerved, with a small thick point terminating the petiole between them. Flowers white, edged with crimson, few, in short terminal racemes, the pedicels very short. Calyx glabrous, or nearly so, 1 inch long or even more, the disk-bearing base narrow cylindrical, the free part about as long, divided nearly to the base into five narrow lobes. Petals clawed, ovate, nearly equal, the lamina nearly 1½ inches long, slightly villous outside near the base. Stamens ten, rather longer than the petals. Ovary on a long stipe; stigma large. Pod stipitate, flat, 1 to 1¼ inches broad. Northern Australia: Arnhem Bay, Port Essington. Queensland: Broad Sound, Gilbert River, Sutton River, Rockhampton, and islands of Torres Strait." (*Bentham, Flora Australiensis, vol. 2, p. 296, 1864.*)

37136. BRACHYCHITON ACERIFOLIUM Mueller. **Lacebark tree.**
(*Sterculia acerifolia* Cunn.)

This is a semideciduous tree of New South Wales and is commonly called the *Illawarra flame tree, or Lacebark tree.* The flowers are of a bright-red color, which make the trees a conspicuous object at a distance. It attains a height of 60 to 120 feet and a diameter of 2 to 3 feet. The bark is used by the aborigines for making fishing nets. The wood is soft and spongy. (Adapted from *Lindley, Treasury of Botany;* and *Von Mueller, Select Extra-Tropical Plants, p. 81.*)

37137. CASSIA BREWSTERI TOMENTELLA Mueller.

A tree attaining to a height of 30 to 40 feet, with the branches, under side of leaflets, and inflorescence minutely hoary tomentose. The leaflets are small and short and the flowers rather small. The seeds of this

37134 to 37144—Continued.

species appear to be flattened at right angles to the embryo, which, in the other sections of Cassia, lies parallel to the valves. This variety is found in Queensland on hilly pastures and river banks on the Burdikin at Rockhampton, at Port Denis, and on the Fitzroy River. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 282, 1864.*)

37138. CASTANOSPERMUM AUSTRALE Cunn. and Fraser.

Moreton Bay chestnut.

See S. P. I. No. 32087 for previous introduction and description.

37139. ERYTHRINA sp.

37140. FICUS MACROPHYLLA Desf. **Moreton Bay fig.**

See S. P. I. No. 3494 for previous introduction and description.

37141. FICUS RUBIGINOSA Desf. **Port Jackson fig.**

This is one of the hardiest of all the fig trees, and very eligible among the evergreen shade trees, particularly for promenades. This fig, like all other figs, exudes a juice when the bark is wounded, but at present it is put to no useful purpose. The resinous exudation of this tree resembles Euphorbium in appearance, and varies in color from dirty yellow or red to almost white, solid, generally brittle, but tough in the interior of large pieces, opaque, with dull and waxlike fracture; at 30° C. it softens and becomes plastic, like gutta-percha, but not sticky, provided it has been previously wetted with water. In its natural state it has neither taste nor odor but evolves an odor like that of wax when heated, and evinces a characteristic taste on being masticated. It is quite insoluble in water, either hot or cold. The greater part of it is soluble in cold alcohol, and a considerable portion of the remainder in hot alcohol. The names commonly given to this plant are *Port Jackson* fig, *narrow-leaved* fig, and *native banyan.* (Adapted from *Maiden, Useful Native Plants of Australia, p. 225,* and *Von Mueller, Select Extra-Tropical Plants, p. 228.*)

37142 and 37143. PHORMIUM TENAX Forster. **New Zealand flax.**

37142. 37143. Variegated.

37144. STENOCARPUS SINUATUS Endl.

"This tree is known as the 'tulip tree' or 'fire tree' and is so called on account of the brilliancy of its flowers. To the aborigines of northern New South Wales it is known as *yiel-yiel,* or *yill-gill.* The wood is nicely marked, and admits of a good polish. It is close grained, hard, and durable. It is used for staves and veneers, and is also suitable for cabinetwork. It is not a plentiful tree. Diameter 24 inches, height 60 to 70 feet. Northern New South Wales and Queensland." (*Maiden, Useful Native Plants of Australia, p. 600.*)

37145 to 37152. ARALIA CORDATA Thunberg. **Udo.**

From Yokohama, Japan. Procured from L. Boehmer & Co. Roots received February 12, 1914.

"This material came from Kanagawa Ken." (*L. Boehmer.*)

37145. *Kan.*
37146. *Yama.*
37147. *Wase white.*
37148. *Oku white.*
37149. *Yakate red.*
37150. *Yakate white.*
37151. *Wase red.*
37152. *Oku red.*

37153. Schizonotus sorbifolius (L.) Lindl.

(*Spiraea sorbifolia* L.)

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 17, 1914.

"(No. 1046. December 1, 1913.) A variety of the ordinary Sorbus-leaved Spiraea, which is very impartial to adverse conditions. See description of No. 1986a [S. P. I. No. 36799] for further details." (*Meyer.*)

"A shrub 3 to 6 feet high, which suckers freely; stems erect, very pithy, varying from nearly smooth to downy. Leaves 8 to 12 inches long, composed of 13 to 25 leaflets, which are lanceolate, 2 to 3½ inches long, one-half to 1 inch wide; sharply and conspicuously double toothed, green on both sides; usually quite smooth above and the same beneath. Flowers one-third of an inch across, white, produced during July and August in a stiff, erect raceme 6 to 10 inches high; flower stalks downy and glandular; ovaries smooth or nearly so.

"Native of northern Asia from the Ural Mountains to Japan; introduced in 1759. It is distinguished from its near allies *Spiraea lindleyana* and *S. aitchisoni* by its comparatively dwarf, stiff habit, and narrower, stiffer flower panicles. Grown in rich soil it makes a handsome shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 545*, under *Spiraea sorbifolia.*)

Cuttings.

37154 to 37167.

From Tulun, Russia. Presented by Mr. Victor Pissareff, Tulun Experiment Field. Received February 11, 1914.

Quoted notes by Mr. Pissareff.

37154. Triticum aestivum L. **Wheat.**
(*Triticum vulgare* Vill.)

"Common summer wheat of the country. Province Irkutsk, latitude 52° 16′; Malta country, 1913."

37155. Secale cereale L. **Rye.**

"Native summer rye. Province of Yakutsk, latitude 62° 1′ N."

37156. Hordeum vulgare L. **Barley.**

"Summer barley. Province of Yakutsk, latitude 62° 1′ N."

37157. Triticum aestivum L. **Wheat.**
(*Triticum vulgare* Vill.)

"Summer wheat from native wheat. Somewhat frozen, 1913."

37158. Triticum aestivum L. **Wheat.**
(*Triticum vulgare* Vill.)

"Summer wheat *Amerikanka.* Province Yakutsk, latitude 62° 1′ N."

37159. Triticum durum Desf. **Wheat.**

"Summer macaroni wheat. Atbasar Agricultural School, Province of Akmolinsk, crop of 1912."

37160. Triticum aestivum L. **Wheat.**
(*Triticum vulgare* Vill.)

"Winter wheat *Sandomyrka,* Province of Tomsk, Siberia."

37161. Trifolium pratense L. **Red clover.**

"Wild red clover collected at Tulun Experiment Field, Province of Irkutsk, 1913."

37154 to 37167—Continued.

37162. PHLEUM PRATENSE L. **Timothy.**

"Timothy grass, crop of 1912. Irkutsk, from Bajandai field."

37163. VICIA AMOENA Fisch. **Vetch.**

"Wild vetch collected at Tulun, Irkutsk, 1913."

37164. TRITICUM AESTIVUM L. **Wheat.**
(*Triticum vulgare* Vill.)

"Summer wheat. Province of Yakutsk, 1912."

37165. TRIFOLIUM LUPINASTER L. **Clover.**

"Wild clover collected at Tulun, Government of Irkutsk, 1913."

37166. FAGOPYRUM VULGARE Hill. **Buckwheat.**
(*Fagopyrum esculentum* Moench.)

"Native buckwheat, Irkutsk, Malta country, crop of 1913."

37167. TRITICUM AESTIVUM L. **Wheat.**
(*Triticum vulgare* Vill.)

"Native summer wheat. Province of Yakutsk."

37168 to 37213. DIOSPYROS KAKI L. f. **Persimmon.**

From Okitsu, Japan. Presented by Mr. T. Tanikawa, in charge of the Government Horticultural Experiment Station. Received February 19, 1914.

"We take great pleasure in sending you scions of all the *kakis* which we now have in our garden.

"These *kakis* were gathered from several localities of this country as promising varieties. We must confess that it is very difficult to collect all the varieties named in our 'Special Bulletin No. 28,' because many of them are seedlings of some varieties and named by the finder or the cultivator. Such *kakis* are almost always inferior in quality and too scarce in number to be recognized as a variety. For those reasons we regret that we can not send such *kakis* to you." (*Tanikawa.*)

Sweet varieties, as follows:

37168. No. 1. *Tenjin-gosho.*
37169. No. 2. *Ama-hyakume.*
37170. No. 3. *Fuyu.*
37171. No. 4. *Yedoichi.*
37172. No. 5. *Hana-gosho.*
37173. No. 6. *Mizu-shima.*
37174. No. 7. *Jiro.*
37175. No. 8. *Oranda-gosho.*
37176. No. 9. *Oku-gosho.*
37177. No. 10. *Otera.*
37178. No. 11. *Kiara.*
37179. No. 12. *Zenji-maru.*
37180. No. 13. *Ye-gosho.*
37181. No. 14. *Yashima.*
37182. No. 15. *Yedoichi.*
37183. No. 16. *Sekaiichi.*
37184. No. 17. *Tsukiyo.*
37185. No. 18. *Toyo-oka.*
37186. No. 19. *Ogosho.*
37187. No. 20. *Kanro.*

Astringent varieties, as follows:

37188. No. 1. *Handai.*
37189. No. 2. *Shiroto-damashi.*
37190. No. 3. *Saijo.*
37191. No. 4. *Koshu-hyakume.*
37192. No. 5. *Kawa-bata.*
37193. No. 6. *Oyotsu-mizo.*
37194. No. 7. *Takura.*
37195. No. 8. *Akadansu.*

37168 to 37213—Continued.

37196. No. 9. *Yamagaki* (For stocks).
37197. No. 10. *Omidansu.*
37198. No. 11. *Shozayemon.*
37199. No. 12. *Dojo-hachiya.*
37200. No. 13. *Monbei.*
37201. No. 14. *Aizu-mishirazu.*
37202. No. 15. *Fuji.*
37203. No. 16. *Hira-gaki.*
37204. No. 17. *Yotsu-mizo.*
37205. No. 18. *Tanenashi.*
37206. No. 19. *Yemon.*
37207. No. 20. *Hira-tanenashi.*
37208. No. 21. *Meotogaki.*
37209. No. 22. *Yokono.*
37210. No. 23. *Gi-ombo.*
37211. No. 24. *Inayama.*
37212. No. 25. *Obi-shi.*
37213. No. 26. *Onihira.*

37214. LINUM USITATISSIMUM L. **Flax.**

From Hoshangabad, Central Provinces, British India. Presented by Mr. A. Howard, Imperial Economic Botanist, Agricultural Research Institute, Pusa, Bengal, India. Received February 20, 1914.

37215. ORYZA SATIVA L. **Rice.**

From Lima, Peru. Presented by Mr. Benton McMillin, American minister. Received February 17, 1914.

"Highland rice, grown in the montaña of Peru. It is a species produced without irrigation and at an elevation several thousand feet above the sea level. It is quite possible you might develop it into a valuable food product." (*McMillin.*)

37216. TALAUMA HODGSONI Hook. f. and Thoms.

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Gardens. Received February 17, 1914.

This is a tender evergreen tree belonging to the Magnoliaceæ. It is 50 to 60 feet tall, bearing cup-shaped fragrant flowers fully 6 inches across and 4 inches deep, blooming in early spring. The ivory-white petals are quite thick and contrast finely with the glaucous purplish blue sepals. Leaves, 8 to 20 by 4 to 9 inches, obovate oblong, cuspidate or obtuse, leathery, glaucous; flowers solitary, terminal; sepals 3 to 5, purple outside, petals about six in number. This species is a native of the Himalayas, a region which is perhaps richer in handsome magnolialike trees than any other area of equal size in the world. This species grows at altitudes ranging from 5,000 to 6,000 feet. (Adapted from *Hooker and Thomson, Botanical Magazine, pl. 7392,* and *Bailey, Cyclopedia of American Horticulture.*)

37217 and 37218.

From Barberton, Transvaal. Presented by Mr. George Thorncroft. Received February 21, 1914.

37217. CEROPEGIA THORNCROFTII N. E. Brown.

"This is a climber 4 to 5 feet, always found growing up an acacia tree in the dry veldt." (*Thorncroft.*)

"*Ceropegia thorncroftii* closely resembles *C. crispata* N. E. Br., not only in its habit and as regards its foliage, but also in having a cluster

37217 and 37218—Continued.

of thick fleshy roots instead of a tuber. But while it is nearly allied to *C. crispata*, *C. thorncroftii* differs markedly from that species in having much smaller flowers characterized by the gibbous projection at the middle of the keel on the inner side of the lobes, of which there is no trace in *C. crispata*. Mr. Lynch informs us that *C. thorncroftii* requires the usual treatment under ordinary tropical conditions of the other species of the genus except that in winter it appears to demand a rather higher temperature than the majority and to prefer a greater degree of dryness. It has done well in the stove, but has not succeeded in the cactus house. The masses of fleshy roots appear to be sensitive to any excess of moisture, especially if associated with too low a temperature." (*Curtis's Botanical Magazine, 1912, tab. 8458.*)

37218. DIMORPHOTHECA SPECTABILIS Schlechter.

"Magenta color, disk purple, attains a height of 2 feet on the mountain stony places, altitude 5,000 feet. This plant appears after the first rains in October, and is burnt off in the winter by the veldt fires. A very beautiful plant." (*Thorncroft.*)

37219. ZEA MAYS L. Corn.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 21, 1914.

"Seeds of a new variety of early hard maize, *communis minor*. This is a new variety which we believe will be of great interest in those countries in which the early European maize gives good results with difficulty. It is a new variety which we have obtained in this agronomic station by hybridization and selection of various species of hard and soft maizes of different degrees of earliness. It is almost as early a ripener as the variety of *Early Soft* maize, which serves as the base, and almost as hard and good as the *Hardy Canary* maize, with which it was first crossed. It is notably hardy and drought resistant. The plant is small and of good production." (*Bertoni.*)

37220. PHASEOLUS VULGARIS L. Bean.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received January 22, 1914.

"(No. 53a. December 26, 1914.) *Mulatinha* (little mulattress), a bean grown on the dry lands of the interior of Bahia State. One liter of seed purchased in the Mercado Novo at 240 reis [8 cents]." (*Dorsett, Shamel, and Popenoe.*)

37221 and 37222.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received February 6, 1914.

37221. ANNONA CHERIMOLA L. Cherimoya.

"Seeds of the anona which this year produced a few quite good fruits in my garden. This species fruits every year, but usually the fruits are full of seeds and have little edible substance." (*Proschowsky.*)

37222. SECAMONE WIGHTIANA (Hook. and Arn.) Schumann.
(*Toxocarpus wightiana* Hook. and Arn.)

"Small shrub, showy orange-colored flowers, rather thorny." (*Proschowsky.*)

Distribution.—The Provinces of Hupeh and Kwangtung in China and the islands of Hongkong and Hainan.

37223. DENDROCALAMUS STRICTUS (Roxb.) Nees. **Bamboo.**

From Lansdowne, India. Collected by Mr. R. S. Woglum, Bureau of Entomology, while on his trip to India in 1911.

"A very useful and strong bamboo of India, formerly used universally for spear shafts. The plant flowers frequently and does not die down after flowering, as is the case with so many bamboos. The culms are said sometimes to reach a height of 100 feet. (*Woglum.*)

37224 and 37225.

From Algiers, Algeria. Presented by Dr. L. Trabut, director, Service Botanique. Received February 20, 1914.

37224. CORDIA OBLIQUA Willd.

"A beautiful tree, very vigorous with us, introduced as seed from Cochin China." (*Trabut.*)

Distribution.—Western India, extending from the Punjab region southward to Ceylon.

A small, twisted, boraginaceous tree, up to 20 feet in height, with alternate, ovate leaves, smooth above, hairy on the veins below; and lateral or terminal cincinnal inflorescences of small white flowers. From Java and Sumatra. (Adapted from *Koorders and Valeton, Mededeelingen uit 'sLands Plantentuin, vol. 42, p. 67, 1900.*)

37225. JUGLANS REGIA L. **Walnut.**

"The nut has been cultivated in the mountains by the natives from the most ancient times; they propagate them by sowing seed, and they have thus obtained some very fine varieties, which are fixed." (*Trabut.*)

37226. COLOCASIA ANTIQUORUM Schott. **Taro.**

From Mr. H. B. Shaw, who obtained them as a sample from a shipment from Beirut, Syria, imported by M. J. Corbett & Co., brokers, of New York. Corms received February 1, 1914.

"A variety of taro apparently identical with the Egyptian taro. The quality is inferior." (*R. A. Young.*)

37227. COIX LACRYMA-JOBI L. **Job's-tears.**

From Pamplemousses, Mauritius. Presented by the overseer, Royal Botanic Garden. Received February 26, 1914.

37228 to 37325. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

From Seoul, Chosen (Korea). Presented by Mr. George H. Scidmore, American consul general. Received February 17, 1914.

"I submit the following information, which has been obtained, for the most part, from the Director of the Department of Agriculture, Commerce, and Industry, of the General Government of Chosen. The same officer has very kindly supplied samples of 98 varieties of soy beans.

"The usual period during which the seed is sown extends from the middle of May to about July 10. In case the sowing is postponed till the latter part of that period the fields from which wheat has already been harvested are used. The soil is first prepared by plowing and is then shaped into small hemispherical hillocks about 4 feet in diameter. The seed is planted in drill holes on the

top of these hillocks, 6 or 7 inches being left between drill holes and 5 or 6 seeds being sown together in a hole. As a general rule, no manure or other fertilizer is used, but when it is desired to enrich the soil ashes are most commonly employed.

"After the plants have sprouted sufficiently, the shoots are thinned out so as to leave two or three only to each drill hole. This process takes place at the time of the first weeding. The ground surrounding the plants is gone over with a hoe or other implement two or three times to turn over the soil and to weed the field. The process outlined above gives briefly the method of cultivation generally in use throughout Chosen, and is applicable whether the beans are planted in separate fields by themselves or in the same fields with other crops.

"It is used mainly for its food value, the oil, and the residue as a fertilizer after the oil has been expressed. It is valuable as a food product for both men and cattle, the latter finding it a very excellent fodder when the whole plant is used. The principal food products for human consumption derived from the soy bean are bean paste, soy, bean curd, meal, etc." (*Scidmore.*)

37228. "A1. *Six Months.* Yellow. From South Chusei Province, Koshu district."

37229. "A2. *Widower.* Yellow. From North Heian Province, Seisen district."

37230. "A3. *Broad River.* From South Heian Province, Junan district."

37231. "A4. *White.* Yellow. From North Zenra Province, Chinan district."

37232. "A5. *Early Yellow.* Yellow. From North Heian Province, Kokai district."

37233. "A6. *White Stalk.* Yellow. From Kokai Province, Hakusen district."

37234. "A7. *White.* Yellow. From South Zenra Province, Kokujo district."

37235. "A8. *Chestnut.* Yellow. From Keiki Province, Koka district."

37236. "A9. *Yellow.* From North Heian Province, Jijo district."

37237. "A10. *Rengyo Egg.* Yellow. From North Kankyo Province, Kichishu district."

37238. "A11. *White.* Yellow. From South Chusei Province, Koshu district."

37239. "A12. *Chodan.* Yellow. From Keiki Province, Hotoku district."

37240. "A13. *White.* Yellow. From Kogen Province, Heisho district."

37241. "A14. *White.* Yellow. From North Kankyo Province, Shojo district."

37242. "A15. *Food.* Yellow. From South Keisho Province, Genyo district."

37243. "A16. *Small White.* Yellow. From South Heian Province, Eiju district."

37244. "A17. *White Vegetable.* Yellow. From South Chusei Province, Enki district."

37245. "A18. *Rat's Eye.* Yellow. From Keiki Province, Hotoku district."

37228 to 37325—Continued.

37246. "A19. *Large-Grained White.* Yellow. From South Keisho Province, Sensei district."

37247. "A20. *White Rat's Eye.* Yellow. From North Chusei Province, Injo district."

37248. "A21. *White.* Yellow. From Keiki Province, Kokusan district."

37249. "A22. *Soja bean.* Yellow. From Keiki Province, Kaijo district."

37250. "A23. *White Horse.* Yellow. From Keiki Province, Yojo district."

37251. "A24. *White.* Yellow. From South Zenra Province, Defuku district."

37252. "A25. *White King.* Yellow. From Kokai Province, Inritsu district."

37253. "A26. *White.* Yellow. From South Heian Province, Junan district."

37254. "A27. *Burnt.* Yellow. From Kokai Province, Hakusen district."

37255. "A28. *Rich and Virtuous.* Yellow. From Kogen Province, Seizen district."

37256. "A29. *White.* Yellow. From South Chusei Province, Rinsen district."

37257. "A30. *Early White.* Yellow. From North Heian Province, Neihen district."

37258. "A31. *Soja bean.* Yellow. From Kokai Province, Kinsen district."

37259. "A32. *White Rat's Eye.* Yellow. From Keiki Province, Yochi district."

37260. "A33. *White.* Yellow. From South Kankyo Province, Kosan district."

37261. "A34. *Golden.* Yellow. From North Keisho Province, Junko district."

37262. "A35. *White Rat's Eye.* Yellow. From North Chusei Province, Eishun district."

37263. "B1. *Large Date.* Gray. From Keiki Province, Chikusan district."

37264. "B2. *Red.* Gray. From South Heian Province, Eiju district."

37265. "B3. *Tea.* Gray. From South Keisho Province, Shinshu district."

37266. "B4. *Indigo.* Gray. From Keiki Province, Fuhei district."

37267. "B5. *Date.* Gray. From Keiki Province, Maden district."

37268. "B6. *Large Date.* Gray. From Keiki Province, Yojo district."

37269. "B7. *Six Months.* Gray. From South Kankyo Province, Rigen district."

37270. "B8. *Swallow.* Gray. From South Keisho Province, Genyo district."

37271. "B9. *Great Date.* Gray. From North Keisho Province, Hoki district."

37272. "B10. *Red.* Gray. From Kogen Province, Seizen district."

37228 to 37325—Continued.

37273. "B11. *Date.* Gray. From Keiki Province, Yosen district."

37274. "B12. *Red.* Gray. From North Keisho Province, Neikal district."

37275. "B13. *Red.* Gray. From South Chusei Province, Kosan district."

37276. "B14. *Red.* Gray. From South Kankyo Province, Bunsen district."

37277. "B15. *Red Rat.* Gray. From South Heian Province, Eiju district."

37278. "B16. *Red Rice.* Gray. From Kokai Province, Kokusan district."

37279. "B17. *Rat's Eye.* Gray. From North Heian Province, Kijo district."

37280. "C1. *Blue.* Green. From South Kankyo Province, Tansen district."

37281. "C2. *Bluish.* Green. From Kokai Province, Chosen district."

37282. "C3. *Blue.* Green. From North Chusei Province, Mokusen district."

37283. "C4. *Blue.* Green. From South Chusei Province, Koshu district."

37284. "C5. *Blue.* Green. From Keiki Province, Koka district."

37285. "C6. *Blue.* Green. From North Kankyo Province, Meisen district."

37286. "C7. *Barbarian Blue.* Green. From North Kankyo Province, Kichishu district."

37287. "C8. *Clasped Hands.* Green. From Kogen Province, Waiyo district."

37288. "C9. *Clear Green.* Green. From North Chusei Province, Teisen district."

37289. "C10. *Blue.* Green. From Keiki Province, Yojo district."

37290. "C11. *Blue.* Green. From Kogen Province, Seizen district."

37291. "C12. *Camphor.* Green. From North Kankyo Province, Kichishu district."

37292. "C13. *Blue.* Green. From South Chusei Province, Yokusen district."

37293. "C14. *Blue.* Green. From South Heian Province, Junan district."

37294. "C15. *Small Blue.* Green. From South Chusei Province, Ranho district."

37295. "C16. *Blue.* Green. From South Chusei Province, Eisan district."

37296. "C17. *Clear Blue.* Green. From North Heian Province, Jijo district."

37297. "C18. *Barbarian.* Green. From North Heian Province, Neihen district."

37298. "C19. *Yellow Powder.* Green. From South Keisho Province, Shinshu district."

37228 to 37325—Continued.

37299. "C20. *Yellow Roll.* Green. From South Keisho Province, Genyo district."

37300. "C21. *Blue.* Green. From South Kankyo Province, Bunsen district."

37301. "C22. *Blue.* Green. From North Keisho Province, Genfu district."

37302. "D1. *Black.* From South Kankyo Province, Rigen district."

37303. "D2. *Rich Black.* From North Chusei Province, Seisan district."

37304. "D3. *Black Chestnut.* From South Chusei Province, Taiko district."

37305. "D4. *Black.* From Kogen Province, Koryo district."

37306. "D5. *Large Black.* From South Zenra Province, Nanpei district."

37307. "D6. *Black.* From North Keisho Province, Ennichi district."

37308. "D7. *Black.* From North Zenra Province, Chinan district."

37309. "D8. *Black.* From South Keisho Province, Kicho district."

37310. "D9. *Black Rat's Eye.* Black. From North Chusei Province, Tanyo district."

37311. "D10. *Black.* From North Kankyo Province, Kainei district."

37312. "D11. *Rat's Eye.* Black. From South Zenra Province, Reisui district."

37313. "D12. *Rat's Eye.* Black. From Kokai Province, Inritsu district."

37314. "D13. *Black Vegetable.* Black. From South Kankyo Province, Kanko district."

37315. "D14. *Rat's Eye.* Black. From South Kankyo Province, Bunsen district."

37316. "D15. *Rat's Eye.* Black. From South Keisho Province, Genyo district."

37317. "D16. *Black Rat's Eye.* Black. From Keiki Province, Inchiku district."

37318. "E1. *Confucian Scholar.* Striped. From South Heian Province, Tokusen district."

37319. "E2. *Bird's Egg.* Striped. From Keiki Province, Hotoku district."

37320. "E3. *Bird's Egg.* Striped. From North Keisho Province, Guni district."

37321. "E4. *Black Striped.* From North Keisho Province, Eisen district."

37322. "E5. *Food.* Striped. From South Zenra Province, Reisui district."

37323. "E6. *Purple.* Striped. From Keiki Province, Hosen district."

37324. "E7. *Red Striped.* From Kokai Province, Choen district."

37325. "E8. *Thousand Tied.* Striped. From North Heian Province, Neihen district."

37326 to 37376.

From Pyeng Yang, Chosen (Korea). Presented by Rev. W. M. Baird, Union Christian College, through the American consul. Received February 17, 1914.

"Bean seeds. I have been unable to find out their characteristics. Many kinds of beans are grown here. I was able to secure some privately; also at one of the public exhibitions I was able to secure from Honorable Matsunagi, governor of this province, who was the patron of the fair, samples of all the seeds exhibited there, but without descriptions." (*Baird.*)

37326 to 37356. SOJA MAX (L.) Piper. (*Glycine hispida* Maxim.) **Soy bean.**

37326. Green.
37327. Brown.
37328. Small black.
37329. Large black.
37330. Cream with tan markings.
37331. Small black.
37332. Large black.
37333. Small green.
37334. Chocolate color, large.
37335. Cream mixed with brown and green.
37336. Chocolate color.
37337. Green.
37338. Cream with black saddle.
37339. Black with white veining.
37340. Green.
37341. Yellow.
37342. Small brown.
37343. Black and white.
37344. Small yellow.
37345. Large yellow.
37346. Black.
37347. Small brown.
37348. Small black.
37349. Yellow.
37350. Dark brown.
37351. Small dark brown.
37352. Black.
37353. Greenish yellow.
37354. Yellow.
37355. Yellow.
37356. Dark brown.

37357 to 37366. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

37357. Purple.
37358. Blue black.
37359. Gray mottled.
37360. Blue and gray mottled.
37361. Red and gray mottled.
37362. Red.
37363. Gray.
37364. Gray mottled.
37365. Purplish.
37366. Purplish.

37367 and 37368. PHASEOLUS AUREUS Roxb. **Mung bean.**

37367. Very small green.
37368. Small green.

37369 to 37374. PHASEOLUS VULGARIS L. **Bean.**

37369. White with purple spots.
37370. Tan with purple spots.
37371. White and brown.
37372. Black.
37373. Light brown.
37374. Red.

37326 to 37376—Continued.

37375. VIGNA SINENSIS (Torner) Savi. **Cowpea.**
Small, flesh colored.

37376. PISUM SATIVUM L. **Pea.**

37377 to 37379. HOLCUS SORGHUM L. (*Sorghum vulgare* Pers.) **Sorghum.**

From San Giovanni a Teduccio, Italy. Purchased from Dammann & Co. Received January 30, 1914.

37377. "Sugar millet."

37378. "Red seeded."

37379. (No data.)

37380. DIOSPYROS LOTUS L. **Khurma persimmon.**

From Batum, Russia. Presented by Mr. Leslie A. Davis, American consul, who procured them through the courtesy of Prof. A. N. Krasnoff, director of the botanical garden near Batum. Received February 25, 1914.

37381. GARCINIA VIDALII Merrill. **Libas.**

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received February 28, 1914.

"(No. 3941. *Libas* seeds.)"

"This characteristic species of Garcinia is a native of the Province of Rizal, Luzon. It is easily recognized by its rather large, numerously veined leaves, which are broadly rounded at the apex and frequently retuse. It is a tree attaining a height of about 12 meters, the branches and branchlets being stout and somewhat angular, brownish or yellowish, rugose when dry. The leaves are opposite, and obovate or elliptical obovate, 15 to 25 cm. long and 6 to 14 cm. wide. The flowers are 5-merous, the staminate ones with stout, 4-angled, about 5 mm. long pedicels. The fruit is fleshy, greenish, and smooth when fresh, subglobose, 5 to 6 cm. in diameter, edible." (*E. D. Merrill, in Philippine Journal of Science, vol. 3, p. 361, 1909.*)

"This species occurs in the Province of Agusan, northeastern Mindanao." (*Barrett.*)

37382 to 37392.

From Lavras, Minas Geraes, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received February 28, 1914.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37382. ACROCOMIA SCLEROCARPA Martius. **Macaúba palm.**

"(No. 64a. January 22, 1914.) *Macaúba* palm, a beautiful pinnate-leaved species, which grows wild in this region. The trunk reaches a height of 50 feet or more and is profusely covered with sharp spines, varying from 1 to 4 inches in length and black in color. Its distribution in this part of Brazil is very wide; we have observed considerable numbers at altitudes of 900 meters, which leads to the belief that it may prove adaptable to southern California.

37382 to 37392—Contd. (Quoted notes by Mr. Dorsett and others.)

"The leaves are very graceful and somewhat finer than *Cocos plumosa*. As an ornamental plant this palm should be of value. The fruit is produced in clusters sometimes weighing 30 to 40 kilograms. The hard kernel is surrounded by a thick layer of white starchy material, somewhat mucilaginous in texture. Hogs are very fond of the fruits; according to Prof. Hunnicutt, of the Escola Agricola, they will eat them in preference to corn, and they are said to be very fattening."

37383. CUPRESSUS sp. **Cypress.**

"(No. 65a. January 22, 1914.) Seed from a coniferous tree along the main walk leading to the Gymnasio de Lavras. A very handsome tree, compact and symmetrical, glaucous in color. At present the trees are about 20 feet in height. They were introduced here from Sao Paulo."

37384. RHEEDIA EDULIS (Seem.) Planch. and Triana.

"(No. 66a. January 22, 1914.) Seeds from a row of trees growing in the grounds of the Instituto Evangelico. The fruit, which is now ripe, is called *limão do matto* (lemon of the forest) by the natives. The trees are 20 to 25 feet in height, pyramidal in form, and handsome in appearance with their deep-green, glossy foliage. The leaves are 4 to 6 inches in length, oblong lanceolate, acute at the apex, thick, stiff, the veins scarcely visible on the upper surface, prominent beneath. In general characteristics the fruit is almost identical with that of *Rheedia brasiliensis*. The form is elliptical, frequently tapering at both ends, and even prominently pointed at the apex. The length is about 2 inches, diameter 1½ inches, color bright orange-yellow. Stem three-fourths of an inch to 1 inch in length, stout; skin one-eighth of an inch or more in thickness, terebinthine and disagreeable in taste, rather brittle, easily separable from the snowy white pulp which surrounds the seeds. The flavor is acid unless the fruit is almost overripe, and strongly resembles that of *Lansium domesticum*. The character of the pulp is similar to that of the mangosteen, melting, juicy, and beautiful in appearance. The seeds vary from one to three, two being the commonest number, and they are oblong-oval in form, about 1 inch in length, adhering closely to the pulp; when cut, a yellow gamboge oozes out of them. Boys are very fond of this fruit, but the Americans here do not care for it. It is said to make a very superior *doce* or preserve. For trial in California and Florida."

For an illustration of the *Rheedia edulis* tree, see Plate VIII.

37385. EUGENIA sp.

"(No. 67a. January 22, 1914.) A small, guavalike fruit, about three-fourths of an inch in length, oval, orange-yellow in color, produced by a tree 40 to 50 feet in height growing in the virgin forest here. The flower is rather acid but agreeable, and the fruit is very attractive in appearance. For trial in California and Florida."

37386. BEGONIA sp. **Begonia.**

"(No. 69a. January 22, 1914.) A flowering vine growing along the railroad track at Cambuhy, State of Minas Geraes. To be tried in California and Florida."

37387. ZEA MAYS L. **Corn.**

"(No. 70a. January 22, 1914.) Yellow flint corn grown by Pedro de Paulo Lemos, at Pratinha, State of Minas Geraes."

37382 to 37392—Contd. (Quoted notes by Mr. Dorsett and others.)

37388. MELINIS MINUTIFLORA Beauv. **Gordura grass.**

"(No. 71a. January 22, 1914.) Seed of *Capim gordura*, the principal forage grass of this region, from the fazenda of Pedro de Paulo Lemos, at Pratinha, State of Minas Geraes."

37389. CROTALARIA ANAGYROIDES H. B. K.

"(No. 72a. January 22, 1914.) Seed of the *amendoim do matto*, probably a Crotalaria, growing along a watercourse in the Fazenda Modelo of the Instituto Evangelico. A small shrub, 4 to 6 feet high, with bright yellow flowers. For trial in the warmer parts of the United States as a cover crop."

37390. (Undetermined.)

"(No. 73a. January 22, 1914.) A shrub, 6 to 10 feet high, frequent on the campo here. Leaves oblong, obtuse, 2 to 3 inches in length. The fruit is more or less round, about an inch in diameter, and bright orange in color. Surrounding the single large seed is a layer of fibrous pulp, very sweet in taste, and exuding a milky fluid when the fruit is plucked from the stem. For trial in California and Florida."

37391. INDIGOFERA SUFFRUTICOSA Miller. **Indigo.**
(*Indigofera anil* L.)

"(No. 74a. January 23, 1914.) *Anil*, a small wiry shrub, 5 to 6 feet in height, which grows in the pastures around the edge of town. Dr. Argollo, of Bahia, thinks it may prove of considerable value as a cover crop for dry lands. For trial in the southern United States."

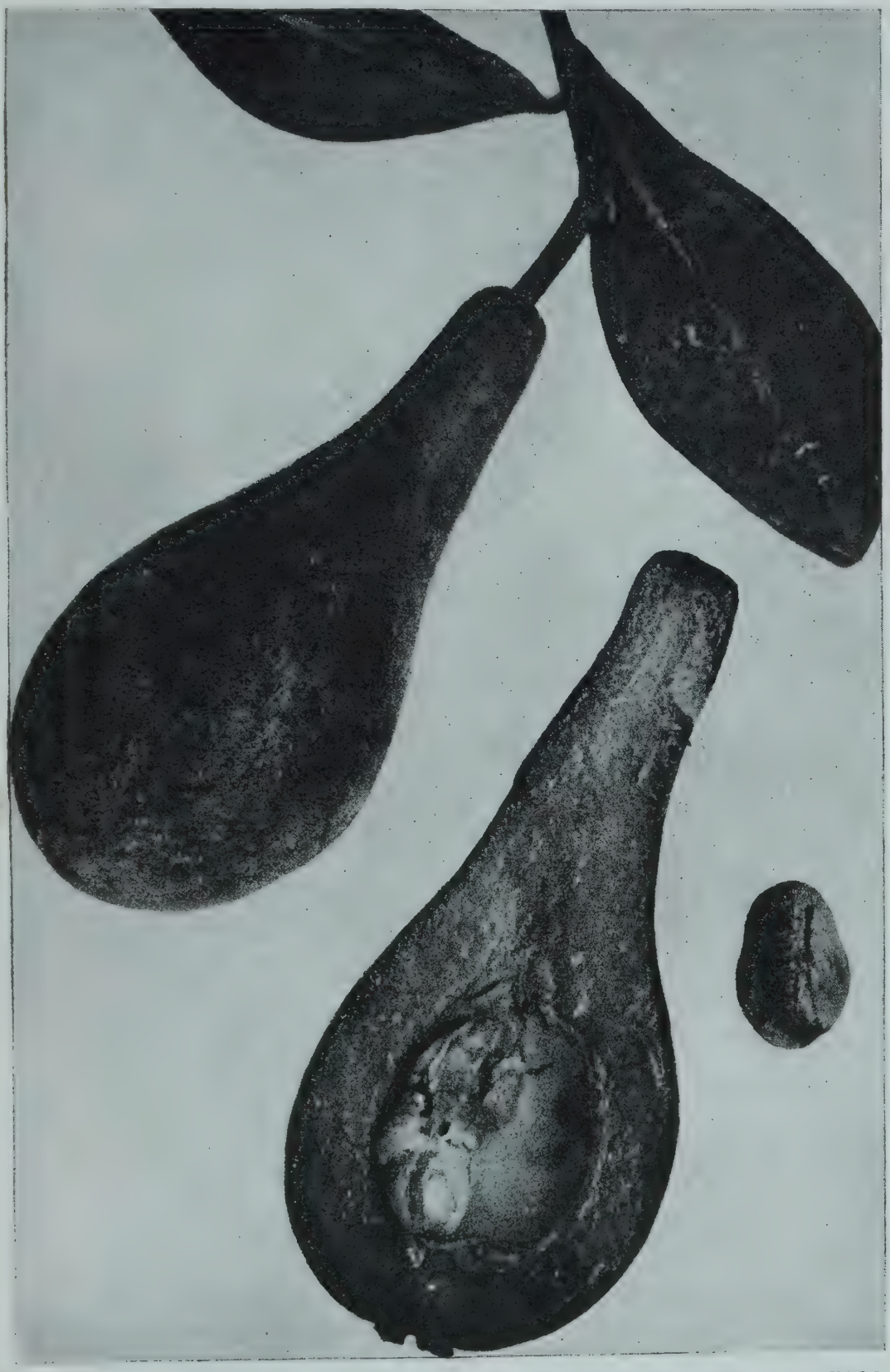
37392. EUGENIA KLOTZSCHIANA Berg. **Pera do campo.**

"(No. 75a. January 23, 1914.) *Cabacinha do campo*, or *pera do campo*. A pear-shaped, very fragrant fruit produced by a small wiry shrub occasionally seen on the campo here. The plant grows to a height of 4 or 5 feet under favorable conditions, with very few branches; when growing on land that is pastured it grows only 2 feet high, with many unbranched stems arising from the ground. The leaves are oblong lanceolate, rather hard and tough, tomentose beneath, and alternate. The fruits are strikingly similar in appearance to a small russet pear. They vary from 2 to 3 inches in length and are russet brown in color, with a thick tomentum on the surface; the skin is thin and surrounds a whitish, very juicy, and aromatic pulp, so fragrant that its odor can be detected several yards away. The flavor is rather acid, but very aromatic. The seeds vary from one to three or four, and are oval or somewhat irregular in shape, about half an inch in diameter. The proportion of seed to flesh is small for wild fruit. The season is said to be November and December; there are very few fruits left now. A very superior *doce* is said to be made from this fruit, and the shrub seems on the whole unusually promising for trial in the mildest parts of the United States."

For an illustration of the pera do campo, see Plate IX.

37393 and 37394.

From Los Angeles, Cal. From Aggeler & Musser Seed Co., through Dr. D. N. Shoemaker, of the Bureau of Plant Industry. Received March 4, 1914.



FRUITS OF THE PERA DO CAMPO OF BRAZIL (EUGENIA KLOTZSCHIANA), S. P. I. No. 37392.

A wild bush, not over 5 feet high, bearing on second-year shoots not 2 feet from the ground several large russet-brown fruits which so scent the air that their presence can be detected many yards away. The melting acid pulp is aromatic and agreeable, and more or less purgative. The bush will probably stand light frosts. (Photographed (P15465FS) by Dorsett and Popenoe, Sitio, Minas Geraes, Brazil, January 20, 1914. Natural size.)

AN ORCHARD OF CHINESE PERSIMMONS (DIOSPYROS KAKI).

The trees are all grafted or patch-budded on *Diospyros lotus*, which seems to thrive particularly well in such situations as this, at the foot of the spurs of the Tsin Mountains at Nantotchu, south of Sianfu, Shensi, China. See S. P. I. Nos. 37465 to 37473 and 37525 to 37540. (Photographed (P13059FS) by Frank N. Meyer, January 22, 1914.)

37393 and 37394—Continued.

37393. COLOCASIA ESCULENTA (L.) Schott. **Taro.**

"(No 143 in their Chinese catalog of 1913.) *Banlung* taro. This taro or dasheen is of the type which produces comparatively few tubers. The corm is elongated and full of tender purple fibers. The variety is apparently identical with one obtained from several different sources, under different names. The quality is excellent, though the corms and tubers are acrid when raw." (*R. A. Young.*)

Corms.

37394. AMORPHOPHALLUS sp.

"(No. 126 in their Chinese catalog of 1913.) *Claw spud.* One of the varieties grown by Chinese gardeners in southern California." (*R. A. Young.*)

Tubers.

37395 to 37404.

From Kongju, Chosen (Korea). Presented by Rev. Wilbur C. Swearer, Methodist Episcopal Church. Received February 26, 1914.

Quoted notes by Mr. Swearer.

37395. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"No. 1. *Cherry* pea. I should say not properly a pea but a bean. Red, white eyed; small variety. Sow in April in soil about an inch deep, in little hills about 6 or 7 inches apart, two or three beans in a hill, weed and hoe three times during the season. The plants grow 1½ feet high without any support and are harvested in the early part of October after the leaves are dried and fallen off, or have been gathered before frost to feed to cattle. These beans and all others I am sending are much smaller than usual, owing to the fact that last summer there was very little rain."

37396 to 37404. SOJA MAX (L.) Piper. **Soy bean.**
(*Glycine hispida* Maxim.)

37396. "No. 2. *Date* bean. Round brown bean. Sown during the first part of April and reaped at the end of August or the first part of September. Cultivated about the same as the *cherry pea* [S. P. I. No. 37395], only in hills about a foot apart. None of these beans do well if planted too close together. This bean fertilizes the ground well; grows to a height of 2 feet. Pods are short and rough and contain 3 or 4 beans each. None of the soy beans are pole beans. This bean is much smaller than usual, owing to the fact that last summer there was very little rain."

37397. "No. 3. *White Chestnut* bean. Round yellowish white bean. A favorite with the Koreans. Cultivated the same as the *Date* bean [S. P. I. No. 37396]. Used as food for animals and people. Appearance of vines similar to the *Date* bean."

37398. "No. 4. *Big Green* bean. Round, flat, yellowish green. Sown in June and harvested in October, they grow 2 feet high. Cultivation similar to that of the *Date* bean [S. P. I. No. 37396]; pods also similar."

37395 to 37404—Contd. (Quoted notes by Rev. W. C. Swearer.)

37399. "No. 5. *Black-Eyed* bean. Small, yellowish, green bean, with black eye. Can be sown in drills; beans 2 or 3 inches apart. The Koreans take these beans after they are dried and place them in water in the house and eat them after they have sprouted, sprout and all, as a vegetable."

37400. "No. 6. *Rat's-Eye* bean. Small, round, black bean. Sown the last part of April, in hills several inches apart, they grow 1 foot high. There are four or five beans in a pod. The people sometimes eat them raw, claiming that they have medicinal properties. Usually they are sprouted and eaten as a vegetable."

37401. "No. 7. *Black Chestnut* bean. Round, flat, black bean. Sown either in April or in June, they are fed to animals or are eaten. This bean is much smaller than usual, owing to the fact that last summer there was very little rain."

37402. "No. 8. *Castor-Oil* bean. So named because the Koreans think it resembles the bean of that plant. Black, with the skin cracked and white streaks showing through. This is also a favorite with the Koreans, both for animal food and for man. This bean is much smaller than usual, owing to the fact that last summer there was very little rain."

37403. "No. 9. *Large Black-Green* bean. Round, dark-green and black. Sown in the middle of May. Cultivation similar to that of the *Date bean* [S. P. I. No. 37396]. This bean is much smaller than usual, on account of lack of rain the past summer."

37404. "No. 10. *Pheasant-Leg* bean. So named because the marking on it resembles those on the leg of a Mongolian pheasant. Small, round, brown bean. Sown the last part of May, not too close together. People eat them usually after they have sprouted them in the house."

37405. AVENA STERILIS L. **Oat.**

From Algiers, Algeria. Presented by Dr. L. Trabut, Government Botanic Service. Received March 5, 1914, as *A. sterilis segetalis* forma *nigra* Trabut.

For a full discussion of these interesting Algerian oats, see L. Trabut, The Origin of Cultivated Oats, Journal of Heredity, vol. 5, p. 74–85, 1914.

37406 to 37420. TRIFOLIUM PRATENSE L. **Red clover.**

Seed from individual selections grown at the Indiana Agricultural Experiment Station, La Fayette, Ind., in the clover nursery; seeded in the spring of 1912, the seed being gathered in the fall of 1913. Selections were made for hardiness, drought resistance, and desirable forage and seed habits.

37406. Riga, Russia, red clover grown from S. P. I. No. 18394, plant 5; total seed yield of plant, 1.75 grams.

37407. Riga, Russia, *Jeletz* red clover, grown from S. P. I. No. 18511, plant 12; total seed yield of plant, 1.5 grams.

37408. Old Swedish red clover, grown from S. P. I. No. 20468, plant 7; total seed yield of plant, 1 gram.

37406 to 37420—Continued.

37409. Wild red clover from Chile, grown from S. P. I. No. 25487, plant 1; total seed yield of plant, 2.5 grams.

37410. North Dakota red clover; total seed yield of plant, 0.04 gram.

37411. Indiana mammoth red clover; total seed yield of plant, 2 grams.

37412. Indiana mammoth red clover; total seed yield of plant, 0.2 gram.

37413. *Perm*, Russia, red clover, grown from S. P. I. No. 30910, plant 2; total seed yield of plant, 0.9 gram.

37414. Missouri red clover; total seed yield of plant, 0.08 gram.

37415. Missouri red clover; total seed yield of plant, 0.32 gram.

37416. North Dakota red clover; total seed yield of plant, 1.2 grams.

37417. North Dakota red clover; total seed yield of plant, 0.8 gram.

37418. Individual selections from unnumbered Indiana plant; total seed yield of plant, 2.1 grams.

37419. Individual selections from unnumbered Indiana plant; total seed yield of plant, 1.8 grams.

37420. Individual selections from unnumbered Indiana plant; total seed yield of plant, 1.55 grams.

37421 to 37444. TRIFOLIUM PRATENSE L. Red clover.

Seed from individual selections grown at the Iowa Agricultural Experiment Station, Ames, Iowa, in the clover nursery; seeded in the spring of 1912; seed gathered in the fall of 1913. The selections were made for hardiness, drought resistance, and desirable forage and seed habits.

37421. Perennial Swiss red clover, grown from seed produced in North Dakota; total seed yield of plant, 6.9 grams.

37422. Orel, Russia, red clover, grown from S. P. I. No. 28036, plant 4; total seed yield of plant, 7.6 grams.

37423. New York red clover; total seed yield of plant, 8.4 grams.

37424. New York red clover; total seed yield of plant, 9.8 grams.

37425. Indiana mammoth red clover; total seed yield of plant, 14.3 grams.

37426. Indiana mammoth red clover; total seed yield of plant, 13.9 grams.

37427. Ohio red clover; total yield of plant, 3.6 grams.

37428. Ohio red clover; total seed yield of plant, 6.4 grams.

37429. Missouri red clover; total seed yield of plant, 9.4 grams.

37430. Siberian drought-resistant red clover, grown from S. P. I. No. 32222, plant 1; total seed yield of plant, 2.1 grams.

37431. Siberian drought-resistant red clover, grown from S. P. I. No. 32222, plant 14; total seed yield of plant, 6.9 grams.

37432. Individual selection; total seed yield of plant, 0.55 gram.

37433. Individual selection of red clover; total seed yield of plant, 8 grams.

37434. Individual selections of red clover, grown from Iowa No. 1; total seed yield of plant 6.1 grams.

37435. Individual selection of red clover, grown from Iowa No. 2; total seed yield of plant, 7.7 grams.

37421 to 37444—Continued.

37436. Individual selection of red clover, grown from Iowa No. 3; total seed yield of plant, 4.8 grams.

37437. Individual selection of red clover, grown from Iowa No. 4; total seed yield of plant, 6.1 grams.

37438. Individual selection of red clover, grown from Iowa No. 5; total seed yield of plant, 3.5 grams.

37439. Individual selection of red clover, grown from Iowa No. 6; total seed yield of plant, 3.9 grams.

37440. Individual selection of red clover, grown from Iowa No. 7; total seed yield of plant, 5.5 grams.

37441. Individual selection of red clover, grown from Iowa No. 8; total seed yield of plant, 4.2 grams.

37442. Individual selection of red clover, grown from Iowa No. 9; tota. seed yield of plant, 8.7 grams.

37443. Individual selection of red clover, grown from Iowa No. 10; total seed yield of plant, 3.4 grams.

37444. Individual selection of red clover, grown from Iowa No. 11; total seed yield of plant, 7.4 grams.

37445 to 37460. TRIFOLIUM PRATENSE L. Red clover.

Seed from individual selections grown at the North Dakota Agricultural Experiment Station, Agricultural College, Fargo, N. Dak., in the clover nursery; seeded in the spring of 1912, the seed being gathered in the fall of 1913. The selections were made for hardiness, drought resistance, and desirable forage and seed habits.

37445. Chile red clover, grown from S. P. I. No. 13515, plant 7; total seed yield of plant, 13 grams.

37446. North Dakota red clover; total seed yield of plant, 12 grams.

37447. North Dakota grown *Sutton's perennial* red clover from England; total seed yield of plant, 6.1 grams.

37448. North Dakota grown from South Dakota red clover; total seed yield of plant, 9 grams.

37449. North Dakota grown perennial Swiss red clover; total seed yield of plant, 6 grams.

37450. North Dakota grown *Orel* red clover; total seed yield of plant, 8 grams.

37451. *Toten*, Norway, red clover, grown from S. P. I. No. 27601, plant 9; total seed yield of plant, 2 grams.

37452. *Hvinden's*, Norway red clover, grown from S. P. I. No. 27602, plant 4; total seed yield of plant, 4 grams.

37453. South Dakota grown *Orel* red clover, grown from S. P. I. No. 27465, plant 6; total seed yield of plant, 14 grams.

37454. *Orel*, Russia, red clover, grown from S. P. I. No. 28036, plant 5; total seed yield of plant, 7 grams.

37455. New York red clover; total seed yield of plant, 11 grams.

37456. Indiana mammoth red clover; total seed yield of plant, 50 grams.

37457. Ohio red clover; total seed yield of plant, 25 grams.

37458. Ohio red clover; total seed yield of plant, 16 grams.

37445 to 37460—Continued.

37459. Missouri red clover; total seed yield of plant, 7.1 grams.

37460. Delaware red clover; total seed yield of plant, 27 grams.

37461. CITRUS SINENSIS (L.) Osbeck. **Jaffa orange.**

Seeds from selected fruits of the Jaffa orange. Purchased in London, England. Received March, 1914.

37462. LYCHNIS CORONATA Thunberg. **Wild pink.**

From Shanghai, China. Presented by Rev. J. M. W. Farnham.

37463 and 37464. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 4, 1914.

"Seed from Botanic Gardens, Tiflis, February, 1914."

"A deciduous tree with the same habit and general aspect as *P. cerasifera;* neither does it appear to differ in the flowers or foliage. The fruit, however, is smaller (about three-fourths of an inch across), yellow, and not indented at the junction with the stalk. Probably this tree and *P. cerasifera* are only varieties of one species. They flower at the same time and are not distinguishable then. There is an old specimen near the cactus house at Kew which is probably one of the largest in the country. It is 25 feet high, 27 feet through, and its trunk is 3 feet 8 inches in girth. Quite possibly trees may be growing in various gardens as *P. cerasifera.* The trees at Kew have rarely borne fruits, but these are quite distinct from cherry plums (*P. cerasifera*). The species is said to be a native of the Caucasus, Persia, Macedonia, etc., and to have been introduced in 1822." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 235,* under *P. divaricata.*)

37465 to 37490.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1914.

Cuttings of the following; quoted notes by Mr. Meyer.

37465 to 37473. DIOSPYROS KAKI L. f. **Persimmon.**

37465. "(No. 1047. Near Lingpao, Honan, China, December 23, 1913.) A local variety of persimmon, being of small size, somewhat angular in shape, of orange-red color; meat firm; can be dried for winter uses. Chinese name *Ssŭ fang shih tzŭ,* meaning 'square persimmon.'"

37466. "(No. 1048. Near Lingpao, Honan, China, December 23, 1913.) A variety of persimmon said to be of large size, of flat shape, but not having a circular incision; color orange-red; meat soft and juicy; not a keeper; seedless. Chinese name *Ta hung pao shih tzŭ,* meaning 'large red persimmon.'"

37467. "(No. 1049. Near Lingpao, Honan, China, December 23, 1913.) A variety of persimmon said to be of very large size; fruits round and slightly tapering toward the apex; meat juicy and sweet; seedless. Chinese name *Ou hsin shih tzŭ,* meaning 'quince-heart persimmon.'"

37465 to 37490—Continued. (Quoted notes by Mr. F. N. Meyer.)

37468. "(No. 1050. Near Lingpao, Honan, China, December 23, 1913.) A variety of persimmon, said to be small, oblong in form, of reddish color, seedless; can be kept for a long time. Chinese name *Chu kuan shih tzŭ*, meaning 'bamboo-cup persimmon.'"

37469. "(No. 1051. Near Lingpao, Honan, December 23, 1913.) A variety of persimmon small to medium in size, round and flattened in shape; bears two furrows on top, which cross each other; color orange-red, of sweet taste, seedless; can be dried. Chinese name *Kuo kai shih tzŭ*, meaning 'pan-covered persimmon.'"

37470. "(No. 1052. Near Lingpao, Honan, December 23, 1913.) A variety of persimmon said be of round-oblong shape, of medium size; meat juicy, color orange red, seedless. Chinese name *Shui ching shih tzŭ*, meaning 'water-well persimmon.'"

37471. "(No. 1053. Near Lingpao, Honan, December 23, 1913.) A variety of persimmon of round-oblong shape, medium in size, color orange reddish, seedless; meat sweet and firm; can be dried. Chinese name *Lien hsin shih tzŭ*, meaning 'lotus-heart persimmon.'"

37472. "(No. 1054. Near Lingpao, Honan, December 23, 1913.) A variety of persimmon of round, flat shape, of medium size, color reddish, seedless; meat not very juicy; can be dried for winter uses. Chinese name *Ching mien shih tzŭ*, meaning 'mirror-face persimmon.'"

37473. "(No. 1055. Near Lingpao, Honan, December 23, 1913.) A variety of persimmon said to bear small fruits, color red, shape round oblong. The tree is a seedling and of tall, vigorous growth; it is said to bear but sparingly. May possibly have an abundance of staminate flowers and be of value as a pollen bearer. Chinese name *Huo ching shih tzŭ*, meaning 'fiery spectacle persimmon.'"

37474. PRUNUS ARMENIACA L. **Apricot.**

"(No. 1056. Near Lingpao, Honan, December 23, 1913.) An apricot said to bear large fruits, which are red cheeked on the side facing the sun, while being of whitish color on the shaded side. The tree grows to a large size. Chinese name *Ta hsing*, meaning 'big apricot.'"

37475 and 37476. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertn.)

37475. "(No. 1057. Near Lingpao, Honan, December 23, 1913.) A variety of jujube said to bear large fruits of dark brown-red color. Chinese name *Ta tsao*, meaning 'big jujube.'"

37476. "(No. 1058. Lingpao, Honan, December 24, 1913.) A variety of jujube bearing very large fruits of dark brown-red color; the meat is quite sweet, but of a loose structure. These jujubes often are as big as small hens' eggs and are locally much used baked in bread. The trees are grown in large groves, and the total acreage of them around Lingpao must run well into the hundreds. Chinese name *Ta hung tsao*, meaning 'large red jujube.'"

37477. FORSYTHIA SUSPENSA (Thunb.) Vahl.

"(No. 1059. Tahuashan, Shensi, China, December 29, 1913.) A variety of golden bell, collected in dry, rocky places at an altitude higher than 5,000 feet. Local name *Lien ch'iao*. Of value especially for the drier sections of the United States."

37465 to 37490—Continued. (Quoted notes by Mr. F. N. Meyer.)

37478. ABELIA TRIFLORA R. Brown (?).

"(No. 1060. Tahuashan, Shensi, December 29, 1913.) A shrub, growing from 4 to 10 feet in height, mostly found on shady places; the old wood becomes curiously grooved, bearing six longitudinal furrows. Of value as an under shrub in large parks and grounds. Local name *Liu t'ung mu.* Collected at an altitude higher than 5,000 feet."

37479. EUONYMUS ALATUS (Thunb.) Rupr.

"(No. 1061. Tahuashan, Shensi, December 29, 1913.) A cardinal's-cap, found in stony places, usually in semishady situations. The young shoots are ornamented with four large corky wings. Collected at an altitude higher than 5,000 feet."

37480. KOLKWITZIA AMABILIS Graebner.

"(No. 1062. Tahuashan, Shensi, December 29, 1913.) A shrub, growing from 4 to 6 feet in height, found in rocky places. Has the look of a Spiraea, but the small fruits are spiny. Collected at an altitude higher than 5,000 feet."

37481. RUBUS sp.

"(No. 1063. Tahuashan, Shensi, December 29, 1913.) An erect-growing Rubus, having the looks of a vigorous raspberry. Collected at an altitude higher than 5,000 feet."

37482. POPULUS sp. **Poplar.**

"(No. 1064. Sianfu, Shensi, January 4, 1914.) A variety of poplar of fastigiate growth with a whitish bark and having apparently large leaves. Of special value as a quick-growing tree for windbreaks. Seems to withstand alkali to a considerable degree, but apparently prefers a moist soil. Local name *Pai yang shu.*"

37483. TAMARIX sp. **Tamarisk.**

"(No. 1065. Sianfu, Shensi, January 6, 1914.) A tamarisk of large growth, able to withstand drought and alkali to a great degree. Of value especially for those semiarid sections of the United States where the winters are not too severe. Chinese name *Shan ch'un liu,* meaning 'mountain spring willow.'"

37484. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 1066. Sianfu, Shensi, January 6, 1914.) A variety of jujube of very gnarled and zigzag growth. The fruits are said to be round, medium size, shining brown-red and of sweet taste. Chinese name *So tsao,* meaning 'tasteful jujube.' Obtained from Mr. J. A. Ross, postmaster at Sianfu."

37485. MAGNOLIA DENUDATA Desr. **Magnolia.**
(*Magnolia yulan* Desf.)

"(No. 1067. Sianfu, Shensi, January 6, 1914.) A magnolia said to bear very large white flowers; this variety grows to large size and is grafted on a wild stock. Chinese name *Pai yü lan.*"

37486. MALUS sp. **Crab apple.**

"(No. 1068. Sianfu, Shensi, January 6, 1914.) A variety of ornamental crab apple, growing to be a large tree. Flowers said to be single, of reddish pink color, and individually of large size. Chinese name *Hai t'ang,* meaning 'sea pear.'"

37465 to 37490—Continued. (Quoted notes by Mr. F. N. Meyer.)

37487 and 37488. MERATIA PRAECOX (L.) Rehd. and Wilson.
(*Chimonanthus fragrans* Lindl.) **Winter-sweet.**

37487. "(No. 1069. Sianfu, Shensi, January 8, 1914.) A variety of Chinese allspice, bearing large dark-yellow, waxy flowers of a remarkably strong sweet scent. Much used for forcing as dwarfed pot plants. Of value as a winter flowering shrub for the mild-wintered sections of the United States. Chinese name *Su hsin la mei*, meaning 'pure-heart allspice." (See also S. P. I. Nos. 37522 to 37524.)

37488. "(No. 1070. Sianfu, Shensi, January 8, 1914.) A variety of Chinese allspice, bearing large pale, waxy yellow flowers, less strongly scented than the preceding, No. 1069 [S. P. I. 37487], but used for similar purposes. Chinese name *Pai yü wan la mei*, meaning 'white jade cup allspice.' Could be very well utilized by American florists as a finely perfumed forcing flower for the winter holidays for the milder sections of the United States." (See also S. P. I. Nos. 37522 to 37524.)

37489. ZIZIPHUS JUJUBA Miller. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 1071. Sianfu, Shensi, January 8, 1914.) *Tortuosissima.* A variety of jujube, grown as an ornamental tree of medium dimensions in Chinese gardens, having most remarkably gnarled, twisted, and crooked branches. The fruits are said to be of good flavor, though not large. Chinese name *Lung chao tz'ŭ shu*, meaning 'dragon's-claw thorn tree.' Obtained from Mrs. A. G. Shorrock, English Baptist Mission at Sianfu."

37490. ROSA sp. **Rose.**

"(No. 1072. Sianfu, Shensi, January 8, 1914.) A local Chinese variety of rose, bearing very large flowers of an old-fashioned real rose color and possessing a faint fragrance. Belongs probably to the group of perpetual bloomers and retains its large and handsome foliage until very late in winter. Chinese name *Yüch chi mu tan*, meaning 'monthly peony rose.' Obtained from Mrs. A. G. Shorrock, English Baptist Mission at Sianfu. Of special value for the drier sections of the United States where the summers are hot and the winters mild."

37491 and 37492.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received March 10, 1914.

Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37491. CAMPOMANESIA GUAVIROBA (DC.) Benth. and Hook. f. **Guabiroba.**

"(No. 92a. Sitio, Minas Geraes. January 28, 1914.) A wild myrtaceous fruit called *guabiroba* by the natives. The plant is 10 to 12 feet high, upright in growth. The fruits are oblate in form, an inch in diameter, orange yellow when ripe, containing one or two perfect seeds and several abortive ones, surrounded by white, melting pulp, of rather acid and guavalike flavor. For trial in California and Florida."

37492. EUGENIA KLOTZSCHIANA Berg. **Pera do campo.**

"(No. 97a. Sitio, Minas Geraes, January 28, 1914.) *Pera do campo*, or *cabacinha do campo.* Seeds obtained from plants on the campo, 5 kilometers below town." See S. P. I. No. 37392 for description.

37493 and 37494.

From Sao Paulo, Brazil. Presented by Mr. George C. Gemmell. Received March 3, 1914.

37493. BRADBURYA sp.

"A vine found running over the ground bearing lavender-colored flowers with a violet center. Flowers the shape of a sweet pea, about 2 to 3 inches across, flowering in July. Has a small pod similar to a bean. Collected at Agua Kente, about the center of the State of Goyaz." (*Gemmell.*)

37494. (Undetermined.)

"An ornamental vine found growing on a tree to a height of 20 feet, bearing large, scarlet flowers the shape of a sweet pea, about 5 inches across. Flowering in July. Pod about 5 inches long, 1 inch wide, containing from three to five seeds. One flower on a stem. Collected at Agua Kente, about the center of the State of Goyaz." (*Gemmell.*)

37495 to 37499. BERBERIS spp. Barberry.

From Dublin, Ireland. Presented by the director, Royal Botanic Gardens, Glasnevin. Received March 7, 1914.

37495. BERBERIS GAGNEPAINI Schneider.

See S. P. I. No. 32701 for previous introduction.

"An evergreen shrub with clustered stems, free from down in all its parts, at present 2 to 3 feet high (perhaps ultimately 4 or 5 feet), the branches set with 3-parted spines one-half to three-fourths inch long. Leaves of firm texture, 1½ to 3 inches long, one-fourth to one-third inch wide, linear lanceolate, tapering to a fine point, dark dull green, the margins undulated and set with slender forward-pointing teeth. Flowers in clusters of about six (sometimes 10 or 12) at each tuft of leaves, each flower on a slender stalk one-half to three-fourths inch long, bright yellow, one-half inch across. Berry black, covered with blue bloom, oval, one-third to five-eighths inch long, one-fourth inch wide.

"Native of Szechwan, China, introduced for Messrs. Veitch by Wilson about 1904. This barberry is one of the most promising of Wilson's introductions from China, being evergreen, of compact, neat habit, and flowering abundantly. Allied to *Berberis hookeri*, it is of more graceful habit. It is quite hardy at Kew, and free growing. It flowers in late May." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 241.*)

37496. BERBERIS PRATTII Schneider.

A barberry, allied to *Berberis polyantha*, with salmon-red, globose berries, oblong obovate, reticulate, thinner leaves, entire or with few spiny teeth, and narrow panicles, up to 6 inches long. Differs from *polyantha*, which has much thicker leaves with a very fine and narrow reticulation, broader, looser inflorescences, shorter bracts, and rather long-styled fruits, swollen and elliptical when dry. (Adapted from *Schneider, in Plantae Wilsonianae*, and *Rehder, in Bailey's Standard Cyclopedia of Horticulture.*)

37495 to 37499—Continued.

37497. BERBERIS SUBCAULIALATA Schneider.

"Very similar in general aspect to *B. stapfiana*, but distinguished by its distinctly angled branchlets, larger leaves, and translucent yellowish green fruits, suffused with red. Native of Tibet and western China." (*New Garden Plants of 1913, Kew Bulletin.*)

37498. BERBERIS HOOKERI Lemaire.

"This Berberis from the mountains of tropical Asia is a hardy, evergreen bush, which attains a height of 10 feet. It is an evergreen of most beautiful aspect, with brown branches, a very dark green, dense foliage, and long, slender, 3-parted spines. The leaves grow in clusters and are about 3 or 4 inches long, with sharp, prickly points and numerous fine serratures, ending in a straight point on each side. On the upper side they are rich, bright green, turning to a claret color in the autumn, and are remarkably netted. On the under side they are pale green and shining. The flowers are large and deep yellow in color." (*Paxton, Flower Garden, vol. 1, p. 12 and 79.*)

37499. BERBERIS WILSONAE Hemsley.

See S. P. I. No. 29959 for previous introduction.

"An elegant deciduous (sometimes partly evergreen) shrub, 2 to 4 feet high, of spreading habit, and usually more in diameter. Branches comparatively thin, reddish brown, slightly downy, armed with slender, 3-parted spines, one-half to three-fourths of an inch long, and red when young. Leaves as a rule less than 1 inch long, mostly oblanceolate, and either rounded or sharply pointed at the apex; otherwise entire, or occasionally three lobed at the apex; smooth, conspicuously veined, gray-green above, somewhat glaucous beneath. Flowers small, pale yellow, borne 2 to 6 together in fascicles or short racemes. Berries roundish, coral or salmon red, somewhat translucent, borne very abundantly.

"Native of western China; discovered and introduced about 1904 by Mr. E. H. Wilson, after whose wife it is named. This is one of the most charming new introductions from western China, of neat yet elegant habit, and most noteworthy for its prettily colored, abundant berries. The leaves are said by Wilson to assume brilliant tints in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 252-253.*)

37500. PYRUS CALLERYANA Decaisne. Pear.

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received February 28, 1914.

"*Pyrus calleryana* is a widely distributed species [in China] and seems not uncommon on the mountains at an altitude of 1,000 to 1,500 meters. It is easily recognizable by its comparatively small crenate leaves, like the inflorescence glabrous or nearly glabrous, and by its small flowers with 2, rarely 3, styles. When unfolding, most specimens show a loose and thin tomentum on the under side of the leaves, which usually soon disappears. . . . The species was introduced by E. H. Wilson to the Arnold Arboretum in 1908 and the young plants seem to be hardy here." (*Alfred Rehder, Proceedings of the American Academy, vol. 50, no. 10, p. 237, 1915.*)

Distribution.—The Provinces of Shantung, Kwangtung, and Kiangsu, in China.

37501. LANSIUM DOMESTICUM Jack. **Duku.**

From Buitenzorg, Java. Presented by the director of the Botanical Garden, Received March 6, 1914.

See S. P. I. No. 24434 for previous introduction and description.

37502. MEIBOMIA GYROIDES (DC.) Kuntze.
(*Desmodium gyroides* DC.)

From Buitenzorg, Java. Presented by Dr. C. J. J. Van Hall, Department of Agriculture. Received March 6, 1914.

"This is the most valuable of the many species of Desmodium known to us at present. It grows in bushy form and produces many leaves; it can also be cut to any height, and lives a long time. *Desmodium gyroides* is to be found in the neighborhood of Plaboeanratoe, up to 2,500 feet. It produces a quantity of seed which is very small, and it is therefore advisable to sow it in lines. The seed will germinate in about a fortnight. One drawback to the use of this plant, however, is that often many of the young plants die shortly after they appear above the ground for some reason which has not yet been satisfactorily explained.

"This Desmodium is considered to be a very good manurial plant for coffee and hevea plantations, since it produces numerous leaves which form a fairly thick humus layer. It does not suffer from any disease; the only fault to be found with it is that some of the plants, after being pruned a couple of times, may be attacked by *Corticium salmonicolor*. If the injured plants be removed immediately, however, there is no fear of any harm being done to the cultivated plants." (*Kew Bulletin, 1914, p. 24.*)

37503. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Northern Nigeria, West Africa. Presented by Mr. J. Shelley, London, England. Received March 7, 1914.

"*Guinea corn* or *dower*. This corn forms the staple article of diet of millions of African negroes. It is very prolific and seems to thrive best in the Tropics, though it is possible that it may be acclimated to grow in the Temperate Zone. The stalks sometimes attain a height of 20 feet. These stalks can be used for forage and basket making." (*Shelley.*)

37504 to 37507.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received March 3, 1914.

Quoted notes by Commander Stearns.

37504. (Undetermined.)

"*Magugu.* A small size tree; grows very thick."

37505. BIXA ORELLANA L. **Arnotto.**

"*Loa.* Useful for red dye from the seeds."

37506. AGLAIA EDULIS (Roxb.) A. Gray.

"*Lagaali.*"

37507. GYNOPOGON BRACTEOLOSA (Rich.) Schumann.
(*Alyxia bracteolosa* Rich.)

"*Gau.* A vine suitable for hedge."

37508. CAPRIOLA DACTYLON (L.) Kuntze. **Giant Bermuda grass.**
(*Cynodon dactylon* Pers.)

Grown at Arlington, Va., and Biloxi, Miss.

"*Giant Bermuda* grass. A very large, vigorous form of Bermuda grass, which at Biloxi, Miss., grows to a height of 20 inches and in a single season produces superficial stolons 15 feet long. The original of this variety has been lost. It was sent to Arlington from the greenhouse under S. P. I. No. 24434, but its association with that number was probably entirely accidental." (*C. V. Piper.*)

37509 to 37516. COLOCASIA ESCULENTA (L.) Schott. **Dasheen.**

Grown at the Plant Introduction Field Station, Brooksville, Fla., season of 1913.

Quoted notes by R. A. Young.

37509 to 37512.

"The propagating material of these strains consists of tubers from a single plant of S. P. I. No. 15395."

37509. "A selected Trinidad dasheen in which the flesh of the corm when cooked is mealy, of good flavor, and yellowish in color, not becoming darker on exposure to the air."

37510. "A selected strain of the Trinidad dasheen in which the flesh of the corm when cooked is mealy, of good flavor, and creamy white in color."

37511. "A selected strain of the Trinidad dasheen in which the flesh of the corm when cooked is mealy, slightly nutty, and almost white in color."

37512. "A selected strain of the Trinidad dasheen in which the flesh of the corm when cooked is mealy, slightly nutty, and grayish white in color."

37513. "A selected strain of the Trinidad dasheen in which the flesh of the corm when cooked is fairly mealy, of good flavor, and grayish white to light violet in color. (Propagating material of this strain was selected from S. P. I. Nos. 15382, 15395, and 19224.)"

37514. "A selected strain of dasheen in which the flesh of the corm when cooked is mealy, slightly nutty, and violet-colored. (Propagating material for this strain was taken from several selected hills of S. P. I. No. 19224)."

37515 and 37516.

"Propagating material for these strains was selected from several hills of S. P. I. No. 15382."

37515. "A selected strain of the Trinidad dasheen in which the flesh of the corm when cooked is mealy, of good flavor, and cream white in color."

37516. "A selected strain of the Trinidad dasheen in which the flesh of the corm when cooked is mealy, slightly nutty, and grayish white in color."

37517 to 37521. Oryza sativa L. Rice.

From Vercelli, Italy. Presented by the director, Rice Experiment Station. Received March 4, 1914.

37517. "Common native variety. Source, Santhia (Novara). Very fertile soils, highest production, matures first decade in October."

37518. "Var. *sekiyama*. Source, Vercelli. In most fertile soils, highest production, matures at the end of September."

37519. "Variety native early No. 2. Source, Santhia (Novara). Fertile soils, medium production, matures at the end of September."

37520. "Native early No. 3. Source, Santhia (Novara). Soils of medium fertility, production medium, matures second decade in September."

37521. "Variety *Sancino*. Source, Vercelli. Fertile soils, good production, matures second decade in September."

37522 to 37548.

From Sianfu, Shensi, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 14, 1914.

Cuttings of the following; quoted notes by Mr. Meyer.

37522 to 37524. Meratia praecox (L.) Rehd. and Wilson. (*Chimonanthus fragrans* Lindl.) Winter-sweet.

37522. "(No. 1076. January 13, 1914.) A variety of the Chinese allspice, having large flowers, the outer petals of which are broad and dark waxy yellow, while the inner ones are brownish red striped, very fragrant. Chinese name *Hu t'i la mei*, meaning 'fox-paw allspice.' Of value as a flowering shrub for the mild-wintered sections of the United States." See also S. P. I. Nos. 37487 and 37488.

37523. "(No. 1077. January 13, 1914.) A variety of the Chinese allspice, being a variety of the preceding number [S. P. I. 37522], flowers smaller, petals less broad and more pointed, inner petals darker colored, possesses a very agreeable, hyacinthlike fragrance. Chinese name *Chien pan hu t'i la mei*, meaning 'narrow-petaled fox-paw allspice.' Of value as a flowering shrub for the mild-wintered sections of the United States."

37524. "(No. 1078. January 13, 1914.) A variety of Chinese allspice, having small flowers of rather dark yellow color, strongly scented; apparently the wild type. Chinese name *Kou ying la mei*, meaning 'dog-fly allspice.' Of value as a garden shrub in mild-wintered climates."

37525 to 37539. Diospyros kaki L. f. Persimmon.

37525. "(No. 1081. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of medium size, round shape, orange-yellow color, and seedless; can be either dried or kept fresh for a long time. Chinese name *Fên niu hsin shih tzŭ*, meaning 'rosy oxheart persimmon.'"

37526. "(No. 1082. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be much like the preceding [No. 37525], but somewhat smaller and of brighter color. Chinese name *Fên shih tzŭ*, meaning 'rosy persimmon.'"

37522 to 37548—Continued. (Quoted notes by Mr. F. N. Meyer.)

37527. "(No. 1083. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of medium size, somewhat square at base, but rounded off at the top, of yellowish color, seedless, not a good keeper. Chinese name *I shêng shih tzŭ*, meaning 'early persimmon.'"

37528. "(No. 1084. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of medium size, square at base, but tapering toward the top; of yellowish color, seedless; can be either dried or kept fresh for a considerable time. The trees generally are heavy bearers. Chinese name *Ch'in shih tzŭ*, meaning 'Chin persimmon.'"

37529. "(No. 1085. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of small size, round shape with rounded-off top, of reddish color and seedless; can be either dried or kept fresh for a long time. Chinese name *Mien tan shih tzŭ*, meaning 'ball-of-flour persimmon.'"

37530. "(No. 1086. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be rather small, square at base but tapering toward top, of red color, and seedless; can be either dried or kept fresh for several months. Chinese name *Hung shih tzŭ*, meaning 'red persimmon.' The bark of an old tree of this variety is characteristically smooth and of an ashy white color."

37531. "(No. 1087. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of elongated shape, square at base, of reddish color, seedless; can be either dried or kept fresh for a long time. Chinese name *Ch'iu chien ting shih tzŭ*, meaning 'autumn-ripening persimmon.'"

37532. "(No. 1088. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of medium size, of angular shape, and yellowish color; calyx very large. The trees are of spreading growth and are prolific bearers. Chinese name *Kou pu ch'ih shih tzŭ*, meaning 'no-dog-can-eat-them-all persimmon.'"

37533. "(No. 1089. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of small to medium size, round shape, yellow color, and seedless; can be either dried or kept fresh for a long time. When not picked, many of the fruits dry on the tree. Chinese name *Kua kan shih tzŭ*, meaning 'persistent persimmon.'"

37534. "(No. 1090. Village of Nantotchu, south of Sianfu. January 20, 1914.) A variety of Chinese persimmon, said to be of large size, of flat shape, with an incision running horizontally around, of orange-yellow color, and seedless. Chinese name *Chung t'ai shih tzŭ*, meaning 'double-stage persimmon.' This variety is apparently identical with *Tamopan*."

37535. "(No. 1091. Village of Nantotchu, south of Sianfu. January 20, 1914.) A Chinese variety of persimmon, said to be of large size, round-oblong shape, and yellowish color; contains but few seeds, and possesses a very agreeable sweet flavor. A superior

37522 to 37548—Continued. (Quoted notes by Mr. F. N. Meyer.)

quality of dried persimmon can be made from it. Chinese name *Niu hsin shih tzŭ*, meaning 'oxheart persimmon.'"

37536. "(No. 1092. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be medium to large in size, round-oblong in shape, with four vertically running furrows, of orange color, and seedless; can be dried. Chinese name *Chien ting shih tzŭ*, meaning 'pointed-top persimmon.'"

37537. "(No. 1093. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be large, of tapering form, but square at base, of red color, seedless; can be either dried or kept fresh for a long time. Chinese name *Shao shih tzŭ*, meaning 'fire-red persimmon.'"

37538. "(No. 1094. Village of Nantotchu, south of Sianfu. January 20, 1914.) A local variety of persimmon, said to be of medium size, of somewhat square, flattened shape, yellow, seedless; can be dried. Chinese name *Man êrh shih tzŭ*, meaning 'meaty' or 'solid persimmon.'"

37539. "(No. 1095. Village of Nantotchu, south of Sianfu. January 20, 1914.) A Chinese variety of persimmon, said to be small, of round-oblong shape, color quite red, seedless; can be kept fresh almost throughout the winter. Chinese name *Huo kuan shih tzŭ*, meaning 'fire-pot persimmon.'"

37540. DIOSPYROS LOTUS L.

"(No. 1096. Village of Nantotchu, south of Sianfu. January 20, 1914.) The original wild form of the North Asiatic persimmon, from which probably nearly all cultivated varieties of so-called oriental persimmons have been developed. The fruits are small, of globular shape and yellowish green color; taste sour and astringent; full of seeds. The tree occurs on gently sloping mountain sides and on the edges of loess ravines; it is able apparently to stand a great amount of drought. Of medium dimensions, inclined to be low branched, bark fairly smooth and scaly, of an ashy color. Locally it is sparingly used as a stock for cultivated varieties. Chinese name *Yeh shih tzŭ*, meaning 'wild persimmon.'"

For an illustration of a Chinese persimmon orchard, see Plate X.

37541. EUONYMUS RADICANS ACUTUS Rehder.

"(No. 1097. Village of Nantotchu, south of Sianfu. January 20, 1914.) A variety of cardinal's-cap, the nonfruiting branches of which climb up against walls and tree trunks. Leaves of glossy green and bronze-red color, persistent throughout the winter. Thrives best in full sun. Chinese name *Tung ch'ing*, meaning 'winter green.' Of value as a wall cover plant for mild-wintered regions."

37542. POPULUS TOMENTOSA Carr. **Poplar.**

"(No. 1098. Village of Nantotchu, south of Sianfu. January 20, 1914.) The white poplar of North China, growing to large size and to old age on congenial spots. Loves somewhat sheltered locations on loess lands or along rivulets on rich but well-drained soil. Of special value as an avenue tree for the milder parts of the semiarid belt in the United States. Chinese name *Ta pai yang shu*, meaning 'big white poplar tree.'"

37522 to 37548—Continued. (Quoted notes by Mr. F. N. Meyer.)

37543. DIOSPYROS KAKI L. f. **Persimmon.**

"(No. 1099. Village of Nantotchu, south of Sianfu. January 20, 1914.) A variety of Chinese persimmon, said to be square at base, with rounded-off top, has vertically running grooves, color orange-red, seedless; can be kept fresh for some time, but is not fit to be dried. Chinese name *Man t'ien hung shih tzŭ*, meaning 'fleshy sky-red persimmon.'"

37544. SYRINGA sp. **Lilac.**

"(No. 1100. From mountains near Nantotchu, south of Sianfu. January 21, 1914.) A lilac of small slender growth, found on a stony mountain slope at an elevation of about 3,000 feet; apparently rare."

37545. LONICERA sp. **Honeysuckle.**

"(No. 1101. From mountains near Nantotchu, south of Sianfu. January 21, 1914.) A bush honeysuckle of open growth, having hairy leaves and flowering apparently very early. Found on dry, shady places at altitudes between 2,000 and 4,000 feet."

37546. EUONYMUS RADICANS ACUTUS Rehder.

"(No. 1102. Village of Yatzeko, south of Sianfu. January 22, 1914.) Collected from a specimen having a trunk as thick as a man's arm. These fruiting branches may perhaps supply very shapely bushes when rooted and kept free from climbing shoots. Of special value for the mild-wintered sections of the United States. See also remarks under No. 1097 [S. P. I. 37541]."

37547 and 37548. CASTANEA MOLLISSIMA Blume. **Chestnut.**

37547. "(No. 1103. Village of Yatzeko, south of Sianfu. January 22, 1914.) A variety of Chinese chestnut, said to have large fruits; is locally being propagated by top grafting. Apparently very resistant to the bark fungus. This variety might be tested in experiments to see whether it retains its resistance to the disease after having been grafted on American stock."

37548. "(No. 2005a. January 14, 1914.) A remarkable large variety of Chinese chestnut, coming from a mountainous district one day's journey to the south of Sianfu. The trees are said to be low branched and not at all of tall growth. Chinese name *K'uei li tzŭ*, meaning 'superior' or 'first-class chestnut seeds.'"

37549 to 37553. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

From German East Africa. Presented by Usumbwa Co., Nyembe Bulungwa, Tabora. Received March 5, 1914.

37549. *Kalundi–1*
37550. *Utembe.*
37551. *Holongo waza.*
37552. *Kalundi–2.*
37553. *M.*

37554. PRINGLEA ANTISCORBUTICA Brown. **Kerguelen cabbage.**

From Havre, France. Presented by Mr. René E. Bossière. Received February 27, 1914.
From Kerguelen Island.

"This species of Pringlea is exceedingly abundant over all of the Falkland Islands, ascending the hills up to 1,400 feet, but only attaining its usual large size close to the sea, where it is invariably the first plant to greet the voyager. Its rhizomata, often 3 or 4 feet long, lie along the ground; they are sometimes 2 inches in diameter, full of spongy and fibrous substances intermixed, of a half-woody texture, with the flavor of horse-radish, and bear at the extremity large heads of leaves, sometimes 18 inches across, so like those of the common cabbage that if growing in a garden with their namesake they would not excite any particular attention. The outer leaves are coarse, loosely placed, and spreading; the inner form a dense white heart that tastes like mustard and cress, but much coarser. The whole foliage abounds with essential oil of pale-yellow color, highly pungent, confined in vessels that run parallel with the veins of the leaf, and which are very conspicuous on making a transverse section of the head." (*Hooker, Flora Antarctica, p. 240.*)

37555 and 37556.

From Sianfu, Shensi, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., March 4, 1914.

Rooted cuttings; quoted notes by Mr. Meyer.

37555. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau. **Bamboo.**
(*Phyllostachys nigra* Munro.)

"(No. 1073. January 10, 1914.) A bamboo having black canes, growing from 15 to 20 feet high. Of very pleasing appearance when planted against a wall and care is taken that the plantation does not become too dense. Chinese name *Mei chu chih.*"

37556. BAMBOS sp. **Bamboo.**

"(No. 1074. January 10, 1914.) A bamboo, growing only 1 to 3 feet high, having fairly broad leaves and but thin stems. It seems to like a situation where the soil does not become too dry. Of special value as a bank binder and a ground cover plant for the mild-wintered sections of the United States. Chinese name *Lo han chu chih.*"

37557. OPHIOPOGON JAPONICUS (L. f.) Ker-Gawler.

From Rome, Italy. Presented by Dr. Gustav Eisen. Received March 16, 1914.

"Seeds of a liliaceous plant, used extensively to form carpets or lawns under the trees or in the open; requires no cutting, as it never grows higher than 4 or 5 inches. If planted closely it makes a very fine lawn, which requires little watering and which does well in the shade. The berries resemble those of Convallaria and are of a splendid sky blue, looking like beads made of lapis luzuli." (*Eisen.*)

37558. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. **Quince.**

(*Cydonia cathayensis* Hemsl.)

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 13, 1914.

Seeds taken from a sample fruit sent in by Mr. Meyer, November 1, 1913.

37559. Amygdalus pedunculata Pallas.

(*Prunus pedunculata* Maxim.)

From Chita, Transbaikal, Siberia. Presented by Mr. M. M. Timogowitsch. Received March 14, 1914.

Distribution.—A shrub found in the region around Lake Baikal in southeastern Siberia and in northeastern Mongolia.

37560 to 37562. Berberis spp. **Barberry.**

From Madrid, Spain. Presented by the curator, Botanic Garden, Madrid. Received March 19, 1914.

37560. Berberis macracantha Schrader.

37561. × Berberis neuberti Lemaire.

"This species of Berberis is a hybrid between *Berberis aquifolium* and *B. vulgaris*. The branches are grayish brown, without spines, and upright. The leaves are simple, oval or ovate, sometimes with one or two smaller leaflets. They are 1½ inches to 3 inches in length, spiny or setulose dentate, and dark grayish green above. The flowers are borne in racemes. This species of Berberis is hardy in the north, but the leaves are not persistent." (*Bailey, Cyclopedia of American Horticulture.*)

"The older leaves are alternate, solitary, evergreen, and in form, color, and substance like those of the common holly. In the axils of some of these are borne tufts of leaves resembling those of the common Berberis, not only in their tufted arrangement, but also in their form, texture, serration, and deciduous character. The leaves of the common Berberis, however, are all simple, while many of these are ternate, some palmately, others pinnately so (i. e., the three leaflets are either stalked or sessile). The hollylike leaves we take to be exaggerated representatives of the palmately divided spines that are commonly met with in the barberry. A similar exaggeration of development is manifested in the ternate leaves. We are indebted to Mr. Nicholson for the identification of this Berberis with that called in German nurseries *B. neuberti* ×, which originated in A. N. Baumann's nursery at Bollweiler, in Alsace, as an accidental cross between the purple-leaved variety of *B. vulgaris* and the common Mahonia (*B. aquifolium*). The explanation of the singular conformation of the plant, with some of the leaves evergreen, others deciduous, is thus furnished by its mixed parentage." (*Gardeners' Chronicle, June 26, 1886.*)

37562. Berberis sp.

37563. Soja max (L.) Piper. **Soy bean.**

(*Glycine hispida* Maxim.)

From Songdo, Chosen (Korea). Presented by Rev. W. G. Cram, the Anglo-Korean School. Received March 19, 1914.

White Manchurian soy bean.

37564 and 37565. Vigna spp.

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received February 21, 1914.

37564. Vigna cylindrica (Stickman) Skeels. **Cowpea.**

Received as *Dolichos*, long Tonkin bean.

37565. Vigna sesquipedalis (L.) Fruwirth. **Asparagus bean.**

"Received as extra long-podded *Dolichos*. This is a buff-seeded variety of the asparagus or yard-long bean." (*W. J. Morse.*)

37566. Solanum quitoense Lam.

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received March 23, 1914.

"*Naranjilla.* A native fruit of Ecuador. Seeds obtained from a small fruit resembling an orange, with a diameter of a trifle more than an inch, very sour, but used locally for salads and refreshing drinks. Also delicious ices are prepared with its juice. The tree grows to a height of 4 or 5 feet in a moderately warm climate, a few hundred feet above the sea level." (*Goding.*)

37567. Chrysopogon aciculatus (Retz.) Trinius.

From Honolulu, Hawaii. Presented by Dr. E. V. Wilcox, Hawaii Agricultural Experiment Station. Received March 12, 1914.

Native *Pilipiliula.*

"This grass is almost exclusively used for lawns at Hongkong, where it is known as *lovilovi* grass. Although rather coarse, it is the most satisfactory grass yet found on the thin soil at Hongkong. When the grass is ready to go to seed, however, it is very objectionable on account of the sharp-pointed fruits, which stick to the clothing wherever they touch it. The grass is also abundant in the Philippines and in India. It makes excellent pasturage, but the objectionable features are such that it is doubtful whether it should be introduced in this country. The present supply of seed has been secured for the purpose of testing in Florida under conditions which will not permit of its spreading until opportunity has been given to determine whether its good qualities will outweigh its bad." (*C. V Piper.*)

Distribution.—Generally distributed throughout tropical Asia, the Polynesian islands, and in Australia.

37568 and 37569. Secale cereale L. Rye.

From Chita, Transbaikal, Siberia. Presented by Mr. A. Savary, director, Central Experiment Station, Transbaikal. Received March 14, 1914.

"Spring rye from the neighborhood of the county seat, Verkhne Udinsk, harvested in the year 1913." (*Savary.*)

37570 to 37576.

From Vladivostok, Siberia. Presented by Mr. John F. Jewell, American consul. Received March 16, 1914.

Seeds grown in the Ussuri district along the Ussuri Railroad; quoted notes by Mr. Jewell.

37570 to 37574. Soja max (L.) Piper. Soy bean.
(*Glycine hispida* Maxim.)

37570. "No. 1. Chinese bean, grown in the village of Chernigovka by P. J. Monostirniy."

37571. "No. 2. Chinese bean, grown in the village of Petrovka."

37572. "No. 3. Chinese bean, grown by St. Troitzky monastery at Shmakovka."

37573. "No. 4. Yellow bean, *Ko-yi.*"

37574. "No. 5. *Khei.*"

37570 to 37576—Continued. (Quoted notes by Mr. J. F. Jewell.)

37575. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"No. 6. No special name for these beans."

37576. PHASEOLUS AUREUS Roxb. **Mung bean.**

"No. 7. *Nogti.*"

37577. CARICA PAPAYA L. Papaya.

From Manila, Philippine Islands. Presented by Mr. William S. Lyon. Received March 11, 1914.

"One of these 'seedless' fruits has now perfected 26 and the other 35 seeds and at the same time we are still getting plenty of entirely vacant fruits. After all, seedlessness is no especial virtue in a papaya, even though the normal fruit found here bears always a double handful, several hundred at least, but has the undoubted value of decreasing the size of the placental cavity and greatly increasing the thickness of the flesh. Most of our seedless plants have had a rind of 30 to 32 millimeters in thickness as against an average of 12 to 15 millimeters of the unimproved kinds. These figures are by measurement and not by guess. If prolificacy be a trait worth cultivating, then this variety has it in a superlative degree. Only about 16 months from the seed, we are now eating the last of the third crop, aggregating (for the three) about 100 fruits, and a fourth crop is due to begin to ripen in about one month. The greater part of the first crop I have sold at the rate of $15 per hundred, although, as I indicated to you before, the greatly reduced size of the subsequent crops would depreciate their market value. Still another freak development I notice, that would make the fixation of the variety even by vegetative means a matter of doubt, is a sudden variation in form, the present crop showing a preponderance of oblong fruits, while a few are as round as a pomelo. This is a feature, however, that I surmise may lie much within the control of the cultivator. The immense size of the fruits and their position, one bearing down upon the other, has an undoubted tendency to elongate them. Careful thinning, I am of the opinion, would modify this to the extent of producing fruits more nearly round; that is a desideratum." (*Lyon.*)

37578 to 37600.

From Edinburgh, Scotland. Presented by the Royal Botanic Garden. Received February 25, 1914.

37578 to 37581. ASPARAGUS spp. **Asparagus.**

37578. ASPARAGUS GONOCLADUS Baker.

37579. ASPARAGUS GRACILIS Royle.

37580. ASPARAGUS PLUMOSUS Baker.

37581. ASPARAGUS SCANDENS Thunberg.

37582 and 37583. SORBUS spp.

37582. SORBUS ALNIFOLIA (Sieb. and Zucc.) Koch.
(*Crataegus alnifolia* Sieb. and Zucc.)

"A deciduous tree of rather slender, erect habit, ultimately 40 to 50 feet high; branchlets furnished with short silky hairs when quite young. Leaves of thin texture; 1½ to 3 inches long, three-fourths of an inch to 1½ inches wide; the apex pointed, the base rounded, margins double toothed; nerves parallel in 7 to 12 pairs; silky hairy

37578 to 37600—Continued.

beneath when young, becoming smooth later; stalk one-half to three-fourths inch long. Flowers white, one-half inch in diameter, produced during May in corymbs 2 to 3 inches across; calyx and flower stalks silky. Fruit one-third to one-half inch long, oval, bright red, no calyx adhering at the top.

"Native of Japan and Chosen (Korea); put in cultivation by Mr. Späth of Berlin about 1892, but may have been known before. It is one of the neatest and most pleasing of the *Micromeles* group, and is very appropriately named. The leaves are bright green beneath, and bear a close resemblance to those of an alder. Fine crops of fruits ripen, and they become very brightly colored, and remain long on the tree, but only a small proportion contain good seeds. Very deserving of cultivation." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 272,* under *Pyrus alnifolia.*)

37583. SORBUS ARIA SALICIFOLIA Myrin. Whitebeam.

"A tree, usually 30 to 45 feet high in gardens, but occasionally met with 60 to 80 feet high; main branches more or less erect; young branchlets clothed with loose white down, becoming nearly smooth and lustrous dark brown by winter, and furnished with pale, wartlike excrescences. Leaves with 8 to 13 pairs of parallel ribs, oval or obovate; 2 to 4 inches long, half to two-thirds as wide; usually tapering, but sometimes rounded at the base, pointed or rounded at the apex; margins doubly toothed; upper surface bright green, smooth except when quite young; always covered with a close white felt beneath; stalk one-half to 1 inch long. Flowers dull white, heavy scented, about one-half inch across, and produced toward the end of May in corymbs 2 to 3 inches across; stalks and calyx covered with white down. Fruit oval or roundish, one-third to one-half inch long, scarlet-red, specked with brownish dots.

"Native of the British Isles and pretty general over Europe; also found in some of its forms in Asia Minor and North Africa. There is no tree more characteristic of the chalk hills of Britain or more beautiful in regard to foliage and fruit, but it is often reduced to a mere shrub. It is very effective in the breeze when the wind, by lifting the leaves, reveals the pure white under surface to the observer in kaleidoscopic glimpses. Although apparently preferring the limestone in a state of nature, it thrives quite well under cultivation in almost any well-drained soil. A tree well laden with the bright red fruits is also one of the most beautiful of autumn pictures; only, owing to the depredations of birds, often of short duration. It is best propagated by seeds, but the young plants grow very slowly at first. The timber is hard and heavy, but it is too scarce to count for much in the timber trade. The largest tree recorded by Elwes is at Camp Wood, near Henley-on-Thames, which in 1905 was 75 feet high by 4 feet 9 inches in girth of trunk.

"Var. *salicifolia.* Leaves narrower than in the type, but not so narrow as in var. *angustifolia;* stalks longer, as a rule." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 274–276,* under *Pyrus aria salicifolia.*)

37584 to 37586. MALUS spp.

37578 to 37600—Continued.

37584. MALUS BACCATA (L.) Moench. **Siberian crab apple.**
(*Pyrus baccata* L.)

See S. P. I. No. 37008 for description.

37585. MALUS CERASIFERA Spach.

"A cross between *Pyrus prunifolia* and *P. baccata* and a very beautiful crab. Flowers white, fruit about the size of a cherry, colored purplish red. The calyx teeth sometimes remain on the fruit, as in *P. prunifolia*, sometimes fall away." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 291*, under *Pyrus cerasifera.*)

37586. MALUS BACCATA (L.) Moench. **Siberian crab apple.**
Var. *maxima.*

37587. PYRUS CANESCENS Spach.

"Probably a hybrid between *Pyrus nivalis* and *P. salicifolia.* In regard to it Decaisne wrote that 'it is intermediate between *P. nivalis* and *P. salicifolia;* its leaves are of the same size as those of *nivalis*, and often twisted as in *salicifolia.*' They are lanceolate or narrowly oval, finely round toothed, very white when young, shining dark green above when mature. Fruit pale green, much shorter stalked than *P. nivalis.* A handsome tree in spring." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

37588. × SORBUS HOSTII (Jacq. f.) Heynh.

"*Pyrus hostii* (*Sorbus hostii* Hedlund) is a hybrid between the above [*P. chamaemespilus* Ehrhart] and some form or ally of *P. intermedia.* The foliage is much larger than of *P. chamaemespilus*, and more resembles that of *P. intermedia* in size and in the presence of down on the lower surface; the toothing is sharp and jagged. In the dense, compact inflorescence and in the upright, pinkish petals the influence of *P. chamaemespilus* is apparent. *P. hostii* is found wild on the Alps of Austria." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 280.*)

37589. × SORBUS LATIFOLIA (Lam.) Pers.
(*Pyrus rotundifolia* Moench.)

"A tree 30 to 45 feet, sometimes over 60 feet high; branchlets downy when young, becoming by winter shining and quite smooth. Leaves roundish ovate, 2 to 4 inches long, often nearly as wide at the base as they are long; the apex pointed, the base either truncate or broadly wedge shaped; margin either cut into triangular, pointed lobes which are sharply toothed, or simply jaggedly toothed; smooth, dark lustrous green above, covered beneath with a grayish felt; ribs 6 to 10 on each side; stalk downy, one-half to 1 inch long. Flowers white, five-eighths inch across, borne in corymbs 3 inches wide during May; stalks and calyx very woolly. Fruits globular, one-half inch in diameter, dull brownish red.

"This interesting tree was first discovered in the forest of Fontainebleau early in the 18th century. Its origin has given rise to considerable difference of opinion, but it is generally believed to be a hybrid between *Pyrus aria* and *Pyrus torminalis.* In many respects, notably in shape and woolliness of leaf, and in colour of fruit, it is certainly intermediate between them. Whether the Fontainebleau tree be a hybrid or not (and it is said to come true from seed), very similar ones found in middle

37578 to 37600—Continued.

Europe are almost certainly hybrids. The tree in various forms is found in the west of England. It has been much confused with *P. intermedia*, and in some of its forms approaches that tree in form of leaf. But it is usually much less downy on the lower surface by the end of the summer, the winter buds are paler, and the angle between the marginal lobes of the leaf is wider, often 90° in *P. latifolia*, whereas in *P. intermedia* it is frequently a mere slit at the base. There is a very fine old specimen in the Earl of Bathurst's woods at Cirencester, between 70 and 80 feet high and 11 feet in girth of trunk." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 286.*)

37590 to 37592. MALUS spp.

37590. MALUS PRUNIFOLIA (Willd.) Borkh. **Siberian crab apple.**
(*Pyrus prunifolia* Willd.)

"A small tree with downy young shoots and ovate or broadly oval leaves, 2 to 4 inches long, half or more than half as wide, unequally round toothed, downy beneath. Flowers white, 1½ inches across, produced in April in umbels of 6 to 10 blossoms; calyx with long, narrow, always woolly lobes. Fruit round or slightly ovoid and elongated, 1 inch in diameter, yellowish or red, crowned with the persistent calyx.

"There is some doubt as to the origin of this crab. Aiton gives the date of its introduction to England as 1758, and its native country as Siberia, to which other authors have added North China. But there appears to be no genuine proof of its existence in either country. It has been suggested that it is a hybrid between *P. baccata* and *P. malus*. It is distinguishable from *P. baccata* in fruit by having the calyx lobes nearly always adhering at the top, although not invariably. Although longer cultivated in Britain than *P. baccata*, it does not appear to have reached so large a size." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 290–291.*)

"This species, which is commonly known as the *Siberian crab*, is a tree native to Siberia and usually attains a height of 20 to 30 feet; the flowers greatly resemble those of the common pear, and the fruit when ripe is of a yellowish color with a slight tinge of red on the side exposed to the sun. The fruit is like that of the medlar; has an austere taste and is more palatable when decay has begun." (*Nicholson, Dictionary of Gardening.*)

37591. MALUS PRUNIFOLIA RINKI (Koidy.) Rehder.
(*Pyrus ringo* Wenzig.)

Var. *fastigiata bifera.*

"A small tree, usually under 20 feet in height, of graceful habit; young branches covered with grayish down. Leaves ovate or oval, 2 to 4 inches long; two-thirds as wide, downy above when young, permanently so beneath, sharply toothed; stalk one-half to three-fourths inch long, downy. Flowers in applelike clusters, each on a woolly stalk 1 to 1½ inches long, rosy red in bud, paler when open, becoming almost white; calyx lobes narrowly lanceolate, hairy on both sides. Fruit pendulous, 1¼ inches long, 1 inch wide, roundish, egg shaped, bright yellow, crowned by persistent calyx lobes.

"This tree appears to have been originally introduced to Europe by Siebold from Japan about the middle of last century, but it is

37578 to 37600—Continued.

not known to be anywhere wild in Japan. It is surmised to be a hybrid between *P. spectabilis* and some form of *P. malus*. As a tree for the garden its great attraction is its abundant, gracefully pendent, bright yellow fruits, which hang from the lower side of the branches in long, crowded rows and make it probably the handsomest of our yellow-fruited hardy trees. They have an applelike flavour and are quite pleasant eating.

"Var. *fastigiata bifera*. A tree of pyramidal habit, probably a hybrid between some form of *P. malus* and *P. ringo*. Fruit abundant, yellow, stained with red, about the size of a pigeon's egg." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 292.*)

37592. MALUS FUSCA (Raf.) Schneider.
(*Pyrus rivularis* Dougl.)

"A tree 20 to 30 feet high, often a shrub; branchlets slender, more or less downy. Leaves variously shaped, from broadly ovate to oblong lanceolate, often 3-lobed; the largest 4 inches long and 2½ inches wide, more often 1 to 3 inches long and half as wide; the base tapering, rounded, or slightly heart shaped, pointed at the apex, sharply toothed; downy on both sides; stalk downy, 1 to 1½ inches long. Flowers white or rose tinted, three-fourths inch across, produced in clusters of 6 to 12. Fruit egg shaped, one-half to three-fourths inch long, red, yellow, or greenish yellow, the calyx teeth fallen away from the top.

"Native of western North America; introduced in 1836, according to Loudon, but little known in cultivation now, although it is offered sometimes in tree catalogues of continental firms. It belongs to the *Toringo* group of crabs, but appears to have no special value for the garden. The fruit has an agreeable subacid taste, and the wood, being close and hard, is valued in the Western States for uses similar to those of apple and pear wood in this country." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 292.*)

37593. × SORBUS ALPINA (Willd.) Heynh.

"This species is commonly known as the *bastard* quince, and is a native of the mountainous parts of Europe. It is a shrub which attains a height of 5 to 6 feet. The flowers, which are of a reddish color, make their appearance in May and June. The leaves are ovate, serrate, glabrous, clothed when young with a deciduous down. The fruit is round and of a reddish color." (*Nicholson, Dictionary of Gardening.*)

"*Pyrus alpina*, Willdenow (*Sorbus alpina* Heynhold), is very nearly allied [to *dippelii*], having *P. aria* and *P. arbutifolia* as its parents. It differs from *P. dippelii* most markedly in having clear red fruits and in the leaves (upper surface especially) being less downy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 282.*)

37594. ARONIA MELANOCARPA (Michx.) Elliott. **Black chokeberry.**
(*Pyrus melanocarpa* Willd.)

"This is a pretty native shrub which is found in the damp woods throughout the country, north and south. When in the woods it is often 8 to 10 feet high, but to be fully appreciated it must be seen as a bushy shrub. It has clusters of white flowers, usually on every branch, and

37578 to 37600—Continued.

later on the clusters change to berries, which become very black and handsome, especially in the late autumn, when the leaves have fallen. The foliage of this bush is of a shining green, changing in autumn to bright yellow, orange, and red." (*Florists' Exchange, August 23, 1913.*)

37595. SORBUS HYBRIDA L. **Bastard service tree.**
(*Pyrus pinnatifida* Ehrh.)

"A deciduous tree, 20 to 40, occasionally over 50 feet high, with ascending branches; twigs covered with loose grayish floss when young, becoming smooth and of a dark lustrous brown by winter. Leaves 3 to 5 inches long, 1 to 2 inches wide; narrowly oblong ovate in main outline, but usually pinnate or cut nearly to the midrib at the base, the upper portion lobed and toothed, but less deeply so toward the apex, which is merely coarsely toothed; the lower surface is covered with a dull gray, persistent down; leaf stalk one-half to 1½ inches long, downy. Flowers white, about one-half inch wide, produced in May in corymbs 3 to 5 inches across. Fruit bright red, round oval, two-fifths inch long.

"This tree, especially handsome in foliage and fruit, is found wild in north and central Europe, and is generally believed to be a natural hybrid between *Pyrus intermedia* and *P. aucuparia.* The influence of the latter is seen in the larger leaves, especially of the sterile shoots, having usually from 1 to 3 pairs of leaflets at the base. On the flowering twigs many of the leaves are simple. It is found wild in the Isle of Arran, rarely in England. It is connected with both *intermedia* and *aucuparia* by intermediate forms, but as a rule reproduces itself true from seed. The habit generally is erect, but a form sent out by Messrs. Backhouse of York with more than usually erect branches is called var. *fastigiata.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289–290.*)

37596 to 37598. COTONEASTER spp.

37596. COTONEASTER DIVARICATA Rehd. and Wilson.

"This species of Cotoneaster, which is valued chiefly for its dark red, often long-persistent fruit, is a native of western China and was introduced into this country in 1909 by Mr. E. H. Wilson. It has been grown successfully in the gardens of the Arnold Arboretum, where it has stood the winters without severe injury. It promises to become a valuable garden plant in this country." (*Arnold Arboretum, Bulletin of Popular Information, No. 19, April 25, 1912.*)

"A deciduous shrub up to 6 feet high, of spreading habit; young shoots clothed with grayish hairs, becoming the second year smooth and reddish brown. Leaves roundish oval, sometimes ovate or obovate, tapered abruptly toward both ends, the apex mucronate; one-third to 1 inch long, one-fourth to five-eighths inch wide (smaller on the flowering shoots); dark glossy green, and soon smooth above, sparsely hairy beneath; veins in three or four pairs; leaf stalk one-twelfth inch or less long. Flowers usually in threes at the end of short twigs, often supplemented by solitary ones in the axils of the terminal leaves, rosy white; calyx lobes triangular, they and the tube loosely woolly. Fruit red, egg shaped, one-third inch long, carrying two stones.

37578 to 37600—Continued.

"Native of west Hupeh and west Szechwan, China; first found by Henry in the latter province about 1887; introduced to the Coombe Wood nursery by Wilson in 1904. It is one of the handsomest in fruit of Chinese Cotoneasters, and was given a first-class certificate by the Royal Horticultural Society in the autumn of 1912. It is allied to the Himalayan *C. simonsii.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408–409.*)

37597. COTONEASTER PANNOSA Franchet.

See S. P. I. Nos. 32936, 33043, and 33159 for previous introductions.

"This evergreen Cotoneaster hails from Yunnan, China, and it is one of the finest berried winter shrubs in cultivation. This species makes a splendid specimen for the lawn, as it has a graceful habit with its drooping, slender branches and small, grayish green leaves. This Cotoneaster is quite hardy in England and should do well against a wall, where it would make a good effect." (*Gardeners' Chronicle, March 4, 1913.*)

"An evergreen shrub of free and elegant habit, 10 feet or more high; branches arching and slender, covered with whitish felt when young. Leaves oval, tapering toward both ends, one-half to 1 inch long, about half as wide; always dull green above, covered with whitish felt beneath; stalk up to one-quarter inch long. Flowers one-quarter to three-eighths inch across, borne in corymbs of as many as 15 or 20; petals white, spreading; calyx woolly. Fruits scarcely one-quarter inch long, dull red.

"Native of Yunnan, China, up to 9,000 feet altitude; raised in Paris in 1888 from seed sent there by the Abbé Delavay. Introduced to Kew in 1892. The differences between this species and *Cotoneaster francheti* have already been alluded to under that species. Both are characterized by extreme elegance of habit, and by being very woolly on young bark, flower stalk, calyx, and under surface of leaves; but *C. pannosa* has duller leaves, less hairy when young on the upper surface, more spreading, whiter petals, and shorter, rounder fruits of a deeper red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

37598. COTONEASTER SALICIFLORIA RUGOAS (Pritz.) Rehd. and Wilson.

"I do not know that the typical *C. salicifolia* is in cultivation. It is a species of West Szechwan, China, discovered by the Abbé David nearly thirty years ago. It has white flowers and red, ovoid fruits, one-sixth of an inch long.

"Var. *rugosa*, Rehder and Wilson (*C. rugosa* Pritzel).—In this variety the leaves are larger, up to 3 inches long and 1½ inches wide, the veins numbering six to twelve pairs. The fruit is coral red, larger than in var. *floccosa*, and contains usually two stones. The plant is more vigorous, coarser looking, and with bigger leaves than var. *floccosa*, but in many respects similar.

"Introduced by Wilson (No. 335) in 1907 from West Hupeh, where he found it 9 feet high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414–415.*)

37599. BERBERIS HOOKERI Lemaire. **Barberry.**

"*Compacta.* A compact form of *Berberis wallichiana* Hort."

See S. P. I. No. 37498 for previous introduction.

37578 to 37600—Continued.

37600. VIBURNUM BUREJAETICUM Regel and Herd.

For previous introduction, see Nos. 20115 and 33776.

"I am doubtful if the true plant to which this name belongs is now in cultivation, although it may be among recent introductions from China. What is usually seen under the name is *V. lantana* or one of its near allies. The true *burejaeticum* is quite distinct. A deciduous shrub whose young shoots are covered at first with a dense, stellate down, becoming almost white and smooth the second year. Leaves ovate, oval or slightly obovate; tapered, rounded, or slightly heart shaped at the base, tapered and often blunt at the apex; 2 to 4 inches long, 1 to 2 inches wide; evenly and angularly toothed, with scattered, mostly simple hairs above, and scattered stellate ones beneath, chiefly on the veins, becoming almost smooth; stalk one-quarter to one-half inch long, scurfy. Flowers white, uniform and perfect, one-quarter inch wide, produced in stalked usually 5-branched cymes, 2 inches across; the stalks covered with stellate scurfy down. Native of Manchuria and China." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 643–644.*)

37601 to 37603. TRITICUM AESTIVUM L. Wheat.

(*Triticum vulgare* Vill.)

From Wageningen, Holland. Presented by Mr. C. J. Hessing, Institute for the Improvement of Agriculture. Received March 27, 1914.

37601. *Wilhelmina.*

37602. *Imperial.*

37603. *Millioen.*

37604 and 37605.

From Victoria, Kamerun, German West Africa. Presented by the Agricultural Experiment Station for Victoria. Received March 27, 1914.

37604. ELEUSINE CORACANA (L.) Gaertn. Ragi.

Native names in the following languages: *Njaderi,* Fulah; *Sigge,* Mbum.

37605. SESAMUM ORIENTALE L. Sesame.

(*Sesamum indicum* L.)

Native names in the following languages: *Sam,* Mbum; *Sidi,* Hausa; *Dam,* Wute; *Manasiri,* Fulah.

37606. × CYDONIA VEITCHII Trabut. Pyronia.

From Algiers, Algeria. Presented by Dr. L. Trabut, director, Service Botanique. Received April 1, 1914.

"I am cultivating three hybrids of Cydonia and Pyrus of Veitch's. These plants here are very vigorous and they seem bound to furnish an excellent stock for pears. I am sending you Pyronia A. [a hybrid between Cydonia (Portugal quince) and Pyrus (Bergamotte Esperen), produced by Mr. John Seden in 1895], which will take the name *Pyronia veitchii* Trabut in my article in the Journal of the Royal Horticultural Society." (*Trabut.*)

37607. Pinanga insignis Beccari. **Palm.**

From Los Banos, Philippine Islands. Presented by Mr. C. F. Baker, University of the Philippines, College of Agriculture. Received March 2, 1914.

"From high on Mount Maquiling, Province of Laguna. This is a very stately and fine red-fruited palm, said to be near *Areca catechu*, but very different in fruit from that species, although the fruit is sometimes used in the same way." (*Baker.*)

37608. Allium trifoliatum Cyrillo.

From Algiers, Algeria. Presented by Dr. L. Trabut, director, Service Botanique. Received March 24, 1914.

"This plant forms a turf. The leaf is very good as a condiment, after the fashion of chives." (*Trabut.*)

Distribution.—An herbaceous perennial found in the countries bordering on the Mediterranean Sea from Italy eastward to Syria and Palestine.

Bulbils.

37609. Coix lacryma-jobi L. **Job's-tears.**

From Singapore, Straits Settlements. Presented by Mr. I. H. Burkhill, Singapore Botanic Gardens. Received March 21, 1914.

37610 to 37612.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received March 23, 1914.

37610 and 37611. Spiraea spp.

37610. Spiraea veitchi Hemsley.

"This is a new species which was discovered in China by Mr. E. H. Wilson and through him it has been introduced into cultivation. The plant forms a neat compact shrub, with thin growths 6 to 8 feet long, of a reddish brown clothed with small glaucous-green, oblong-lanceolate leaves, serrate along their apical portion. The flowers of the short side growths along the whole length of the previous year's shoots are in terminal corymbs, pure white and very showy in mass." (*Hortus Veitchii*, p. 379.)

37611. Spiraea wilsoni Duthie.

"This Spiraea, which was introduced a few years ago from China by Mr. E. H. Wilson, has proven to be a most valuable addition to deciduous flowering shrubs. Robust in growth, *Spiraea wilsoni* forms a large spreading bush 5 to 6 feet in height. The inflorescences of white flowers terminate short axillary shoots, which develop from the upper two-thirds of last year's vigorous shoots. As these bend over in a graceful, arching manner, a bush in full flower presents a pleasing picture. The flowers are borne in flattened, rather compact, rounded corymbs, about the middle of June. The corymbs are about 1½ to 2½ inches across, the individual flowers a quarter of an inch in diameter. *S. wilsoni* makes a nice lawn specimen for small or large gardens, while for large clumps and shrubby borders it is well worth consideration." (*The Garden, August 30, 1913.*)

37610 to 37612—Continued.

37612. VIBURNUM SARGENTI Koehne.

"This shrub usually grows from 5 to 8 feet tall, with upright branches which, on adult plants, assume a dark-gray, corky appearance. The leaves are roundish ovate to ovate, usually 3-lobed, rounded to square at the base, 2½ inches long and 2 inches broad, dark yellowish green and smooth above, pale green and somewhat pilose beneath. The flattish corymbose flower cluster, with prominent showy neutral flowers surrounded by the corymbs, and the fertile flowers with purple anthers come in blossom about the first of June. The subglobose or rounded fruit, scarlet or orange-scarlet, ripens in September. This species greatly resembles *Viburnum americana*, but differs from it in its more upright habit, largely ray flowers, and the fruits are not as brilliant and are considerably smaller and less abundant. *Viburnum sargenti* is perfectly hardy at Rochester, N. Y., and there it is a very useful park and garden shrub." (*The Florists' Exchange, May 20, 1911*).

37613 to 37622.

From Cambridge, England. Presented by Mr. R. Irwin Lynch, curator, Botanic Garden. Received March 24, 1914.

37613. AMYGDALUS PERSICA L. **Peach.**
(*Prunus persica* Stokes.)

37614. CYDONIA OBLONGA Miller. **Quince.**
(*Pyrus cydonia* L.)

See S. P. I. No. 30059 for previous introduction and description.

37615. LAUROCERASUS LUSITANICA (L.) Roem.
(*Prunus lusitanica* L.) **Portuguese cherry laurel.**

"An evergreen shrub of wide, bushy form, usually 10 to 20 feet, but occasionally 40 to 50 feet high, more in diameter; young branches quite smooth and very dark. Leaves ovate or oval, 2½ to 5 inches long, 1¼ to 2 inches wide; quite smooth on both surfaces; very dark, glossy green above, paler below; shallowly roundish toothed. Racemes produced in June from the ends of the previous summer's shoots and from the axils of their leaves; 6 to 10 inches long, 1 to 1¼ inches through, more or less erect. Flowers white, one-third to one-half inch across, calyx cup shaped, with shallow, rounded lobes; stalk one-third of an inch long. Fruit dark purple, one-third of an inch long, cone shaped, pointed. 'Native of Spain and Portugal; introduced in 1648' (*Alton*). In all but the coldest parts of Great Britain the Portugal laurel is one of the handsomest and most effective of evergreens. It should be grown as isolated specimens, especially in thinly wooded parts of the grounds. Although it is chiefly valued for the luxuriance of its rich green lustrous foliage, it has some merit as a flowering shrub, for in June it produces an extraordinary profusion of long, slender racemes, whose only defect is that the flowers are rather dull. It is hardier than the cherry laurel, and on warm, well-drained soil withstands 32 degrees of frost without being in the least affected." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 241*).

37616. MALUS BACCATA (L.) Moench. **Siberian crab apple.**
(*Pyrus baccata* L.)

See S. P. I. Nos. 26681 and 31028 for previous introductions.

37613 to 37622—Continued.

37617. MALUS PRUNIFOLIA (Willd.) Borkh. **Siberian crab apple.**
(*Pyrus prunifolia* Willd.)

See S. P. I. Nos. 27124 and 30251 for previous introductions and S. P. I. No. 37590 for description.

37618. MESPILUS GERMANICA L. **Medlar.**

See S. P. I. No. 29197 for previous introduction.

"A low deciduous tree of crooked, picturesque habit, usually under 20 feet high; young branchlets very hairy, older ones armed with stiff, straight spines one-half to 1 inch long. Leaves almost without stalks, lanceolate or oval, 2 to 5 inches long, minutely toothed; downy on both surfaces, but more so beneath. Flowers solitary at the end of short leafy branches; about 1 inch across, white or slightly pink, produced on a very short, woolly stalk in May or early June. Petals five, roundish; sepals covered with gray wool, triangular at the base, drawn into a long, narrow point standing out beyond the petals. Fruit five celled, apple shaped, brown, with a broad, open eye, surrounded by the persistent calyx, and showing the ends of the bony seed vessels.

"The wild medlar is a native of Europe and Asia Minor and is found wild in the woods of several counties in the south of England, notably Sussex and Kent, but it is not believed to be truly indigenous. It has long been cultivated for its fruit in English orchards, and several named varieties exist. The cultivated forms are distinguished by thornless or nearly thornless branches, by larger, broader leaves, and by larger fruits, up to 1½ or 2 inches across. Although much esteemed by those who have acquired the taste for them, medlars are not a popular fruit. They should be left on the tree until the end of October or later, then stored in a fruit room until they are 'bletted'—a term given to indicate a state of incipient decay. A jelly made from the fruits meets a more general taste. The medlar is most closely allied to Crataegus, differing in the solitary flower, etc. It is very hardy and not particular as to soil." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 81–82.*)

37619. PRUNUS DOMESTICA INSITITIA (Jusl.) Schneider. **Bullace.**
(*Prunus institia* Jusl.)

"This species of Prunus is a tall, much-branched shrub, which sometimes attains a height of 20 feet. The flowers are white and appear on the branches before the leaves. The lateral clusters are only one to two flowered. The fruit of this species is globose, nearly black, and in the wild state about one-half inch in diameter." (*Britton and Brown, Illustrated Flora of the Northern States and Canada.*)

"A small deciduous tree with foliage similar to that of *Prunus communis*, but with some of its branches spiny. Fruit globular, three-fourths inch in diameter, black or yellow; several white-fruited varieties are grown in orchards. The bullace is a native of Britain and other parts of Europe. Being found in many hedgerows, the typical form scarcely deserves a place in the arboretum, but the double-flowered variety is more ornamental. *P. spinosa, insititia,* and *communis* are by some authorities considered as all forms of one species. It is easy enough to distinguish *P. spinosa* by its black bark, its small, sharply toothed

37613 to 37622—Continued.

leaves, and small, round, black fruits. But *P. insititia* and *communis* are more closely allied; they both have brown bark, larger and more bluntly toothed leaves, but the fruit of the bullace is round and often white or yellow, whilst the plum is black and oval. Intermediate forms occur, of which the damson is one, having an oval, purple, sour fruit. (The damsons take their name from Damascus, where they have been cultivated since before the Christian era.) The Mirabelle group of plums, with round, yellow fruits, acid and sweet, belong to *P. insititia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 238.*)

37620. PYRUS SALICIFOLIA Pall. Willow-leaved pear.

See S. P. I. No. 26764 for previous introduction and description.

"A tree 15 to 25 feet high, branchlets covered with down, which is quite white when young. Leaves 1½ to 3½ inches long, one-third to two-thirds inch wide; narrowly lanceolate, tapering gradually towards both ends, covered when young on both sides with a beautiful silvery gray down; later in the year this falls away from the upper surface, leaving it shining green; margins quite entire; stalk one-half inch long or less, sometimes scarcely noticeable. Flowers pure white, about three-fourths inch across, produced in April, closely packed in small rounded corymbs, the calyx and flower stalk covered with white wool. Fruit of the typical pear shape, 1 to 1¼ inches long and wide.

"Native of southeastern Europe and Asia Minor; introduced in 1780. It is much the most ornamental of all true pears. Its leaves and flowers often open simultaneously, and it then presents a very charming picture, the willowlike leaves being of a conspicuous silky white. After the flowers fade, the leaves remain silvery for some weeks, gradually, however, becoming greener on the upper surface. The fruit is harsh to the palate and of no value." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 292–293.*)

37621 and 37622. RIBES spp.

37621. RIBES ALPINUM L. Currant.

"This species of Ribes which is commonly called the *Mountain* currant is a native of the mountains of Europe and the Orient. The branches are whitish and upright and the leaves slightly hairy above. The flowers, which are dicœcious, are yellowish green in color and occur in staminate and pistillate clusters, the former having 20 to 30 flowers and the latter 5 to 10 flowers to the cluster. The peduncles are glandular hairy, and the bracts are longer than the pedicel and flower. The fruit of this species is smooth, scarlet colored, and insipid or sweetish to the taste." (*Bailey, Cyclopedia of American Horticulture.*)

37622. RIBES SPECIOSUM Pursh. Gooseberry.

This is a hardy shrub which is a native of California and apparently of Mexico. If this species can not be said to be so beautiful a shrub as *Ribes sanguineum*, the *Scarlet* currant, it is at least by far the most elegant of gooseberries and considered by some to be the most showy member of the genus. In brilliancy of color it is perhaps superior to that species, and in the abundance of flowers nearly its equal. With all its beauty, however, this species has the demerit, common to all gooseberries, of hiding its pretty bright red

37613 to 37622.—Continued.

flowers with its leaves. The branches are covered with fine reddish prickles and glandular tipped hairs. The thorns are long, slender, and occur commonly in threes. The leaves are small, thick, shining, and partially evergreen. The berries are small, prickly, dry, and few seeded. (Adapted from *Botanical Register, vol. 18, pl. 1557 (1832)*, and *Bailey, Cyclopedia of American Horticulture.*)

37623. CITRUS sp. **Orange.**

From Singapore, Straits Settlements. Presented by Capt. J. Prentice, Corps of Engineers, United States Army. Received March 19, 1914.

"Seeds from Johore oranges. A very fine variety of free peelers, sweet, russet skin. To be tested in Florida." (*Prentice.*)

37624. CUCUMIS MELO L. **Muskmelon.**

From Barcelona, Spain. Presented by Mr. Henry H. Morgan, American consul general. Received March 19, 1914.

"The so-called *Valencia*, which matures in the late fall and keeps in good condition for three or four months, melons of this variety being obtainable throughout Spain as late as the month of February. These melons do not generally ripen on the vine, but are gathered while green and hung in nets from the ceiling and doorways, after they have been gathered and exposed to the air and sun, where the ripening process is completed. The sweetest and most exquisite varieties are grown in warm climates, somewhat tempered by fresh winds. Melons can be grown to perfection with a bottom heat of 75° F., gradually increasing to 80°, and an atmospheric temperature of 75° to 80° when the fruit is swelling, as much sun heat as the plant can bear being allowed at all times. The melon thrives best in rich turfy loam, somewhat heavy, with which a little well-rotted manure has been mixed. In planting, the seeds are almost invariably used. Shoots are also employed, although to a very limited extent. Once the seeds are put in the ground the plant is allowed to thrive and no transplanting takes place. Melons exposed to the south and west always crack, which is remedied somewhat by turning the fruit over and changing its position. The purer the water applied the sweeter the fruit will be. Cold and impure water from wells has a prejudicial effect. When the soil contains too much humidity wooden boards or tiles should be placed under the fruit, thus preventing it from rotting. The melon is ripe when its stem changes color and tends to separate itself from the fruit. The best grades are solid and heavy, with a shiny peel. The winter melons, which are gathered before ripening, will subsequently become completely seasoned. These fruits should be gathered in dry periods and never immediately after a heavy rainfall. The best time to pick melons is at daybreak." (Extract from *Consular report, "Melon Cultivation in Spain."*)

37625 and 37626.

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Roots received March 30, 1914.

37625. EUCHLAENA MEXICANA Schrad. **Teosinte.**

"From Coscomatepec, Vera Cruz, a railroad station between Cordobà and Huatusco. I saw the grass teosinte in several of the fields near that town. It is raised as a forage plant. This grass seems to be a little tender, because I saw it was damaged some by frost, which is not unusual

37625 and 37626—Continued.

in that place, because it must be 400 to 500 feet high and is situated at the foot of Citlaltepetl, the so-called Peak of Orizaba. This grass is not propagated by seed, but, like sugar cane, by cuttings. The lower parts of the stems are cut like sugar cane and put into the ground. It grows in bundles and stands frost to a certain degree." (*Purpus.*)

37626. POLYGONUM SACHALINENSE F. Schmidt. **Sacaline.**

"Forage plant from Japan."

37627 to 37631.

From Paris, France. Presented by the director, Museum of Natural History. Received March 18, 1914.

37627. DIOSPYROS LOTUS L. **Persimmon.**

For previous introductions, see S. P. I. Nos. 36808 and 37380.

37628. PRUNUS sp.

Received as *Cerasus salicifolia*, but the seeds do not agree with those in the seed collection under this name.

37629. PRUNUS DOMESTICA L.

"Var. *armenioides* Lieg."

For previous introduction, see S. P. I. No. 33170.

37630. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider.

See S. P. I. Nos. 37463 and 37464 for previous introductions.

37631. LAUROCERASUS ILICIFOLIA (Nutt.) Roemer. **Cherry laurel.**
(*Prunus ilicifolia* Walp.)

"This is an evergreen bush or tree commonly known as the *Spanish wild cherry* or the *mountain evergreen cherry*. It is a small tree, rarely becoming 30 feet tall, with a dense crown. The leaves are ovate to ovate-lanceolate and hollylike, acute, or sometimes acuminate, mostly broad and sometimes rounded at the base. The margins are coarsely spiny toothed and the blades thick and shining. The flowers are white and are borne in slender racemes less than 2 inches long in the spring. The fruits are rather large, sometimes two-thirds of an inch long, nearly globose, purple or nearly black. This species is a most worthy garden plant and may be seen growing from San Francisco to Lower California." (*Bailey, Cyclopedia of American Horticulture.*)

37632 to 37637. ORYZA SATIVA L. **Rice.**

From Mandalay, Burma, India. Presented by Mr. E. Thompstone, Deputy Director of Agriculture, Northern Circle. Received March 31, 1914.

Quoted notes by Mr. Thompstone, except as indicated.

"*Rangoon* or *Rangooni Chal.* Certain samples of rice under the vernacular name were collected by this office in Khulna in 1906. This is a kind of *Atap* and is aso sold in Calcutta. The *Rangoon Chal* is cheaper than the *Deshi* variety of *Atap* and is generally consumed by the poorer classes. I am inclined to believe that rice imported from Rangoon is generally called *Rangoon* or *Rangooni Chal.*" (Extract from *Letter, April 9, 1914, Botanical Survey of India.*)

37632. "No. 2. *Ngaseingyi.* This is a *Kauk kyi* or main crop and is transplanted in July or August when the nursery plants are 30 to 45 days old. Longevity is about 125 days from transplanting; good to eat and is in great demand for milling."

37632 to 37637—Contd. (Quoted notes by Mr. E. Thompstone.)

37633. "No. 6. *Taungteik pan.* This is also a main crop, transplanted in July or August when the nursery plants are 30 to 45 days old. Longevity is about 110 days from transplanting. Grains small and soft; consumed largely by well-to-do people."

37634. "No. 55. *Nga cheik.* Main crop, transplanted in July or August when the nursery plants are 30 to 45 days old. Longevity is about 115 days from transplanting. It is a glutinous rice of black color; good to eat."

37635. "No. 157. *Mya wa.* Main crop, transplanted in July or August when the nursery plants are 30 to 45 days old. Longevity is about 115 days from transplanting. Glutinous; fairly good to eat."

37636. "No. 280. *Byat pyu.* Main crop, transplanted in July or August when the nursery plants are 30 to 45 days old. Longevity is about 110 days from transplanting. Good to eat; consumed largely."

37637. "No. 395. *Kyaung byu.* Main crop, transplanted in July or August when the nursery plants are 30 to 45 days old. Longevity is about 95 days. Rice soft, good to eat."

37638 to 37646.

From St. Petersburg, Russia. Presented by the director, Imperial Botanic Gardens. Received March 19, 1914.

37638. CORONILLA SCORPIOIDES (L.) Koch.

See S. P. I. No. 30106 for previous introduction.

37639. MEDICAGO FALCATA × SATIVA.

37640. CLEMATIS FUSCA MANDSHURICA Regel. Clematis.

Distribution.—A suberect herbaceous perennial with grayish brown flowers, found in the eastern part of Asia from the Baikal region eastward to Kamchatka and Sakhalin, and in Japan.

"A semiherbaceous climber, 8 or 9 feet high, stems angled, downy when young. Leaves pinnate, 4 to 8 inches long, and composed mostly of five or seven leaflets, which are ovate with a rounded or heart-shaped base, and often long, tapering points, not toothed; smooth or slightly downy beneath. Flowers solitary on stout stalks, which are one-half to 1 inch long, and thickly covered with reddish brown hairs. The flower has the pitcher shape of the Viorna group, the sepals being three-fourths to 1 inch long, the points recurved; outside they are reddish brown, woolly. Seed vessels with tails about 1¼ inches long, plumed with yellowish brown, silky hairs. Native of northeastern Asia, from Asiatic Russia through Manchuria to the Kuril Islands. It is an interesting but not very ornamental plant, distinct in its group because of the very short, hairy flower stalks and the hairiness generally of the flower. It grows very well and produces abundant seed." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 360.*)

37641. CRATAEGUS OXYACANTHA L. Hawthorn.

"Var. *incisa.*"

37642. PRUNUS PROSTRATA Labill. Bush cherry.

For previous introduction and description, see S. P. I. No. 28945.

"A deciduous shrub, 2 to 3 feet high, of low, spreading habit and measuring much more in width than it does in height. Branches slender,

37638 to 37646—Continued.

arching outwards and downwards, the young ones covered with a minute, dark-colored down. Leaves ovate or obovate, pointed, from 1 to 1½ inches long, sharply toothed, and downy beneath (less markedly so in cultivation). Flowers one-half to three-fourths of an inch across, produced singly or in pairs with the young leaf clusters from the previous season's shoots in April, very short stalked; petals of a lively rose color; calyx tubular. Fruit almost stalkless, red, one-third of an inch long, tapering towards the end.

"Native of the mountains of the Levant, where it usually makes a close, stunted bush, very unlike the rather free-growing plant seen in this country. It needs a sunny position and is admirably suited on some roomy shelf in the rock garden fully exposed to the sun. In such a position, following a hot summer, it flowers profusely enough to almost hide its branches. It is perfectly hardy at Kew, and it is rather remarkable that it remains so rare and little known, seeing that it was introduced (from Mt. Lebanon) in 1802." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 248–249.*)

37643. LONICERA CHRYSANTHA Turcz. **Honeysuckle.**

"This species of Lonicera, which is valued chiefly for its dark red fruits, is one of the most conspicuous of the early-flowering species. It is a native of eastern Siberia, and since its introduction by Mr. E. H. Wilson in 1910 has proven perfectly hardy in the gardens of the Arnold Arboretum." (*Arnold Arboretum Bulletin of Popular Information, Nos. 19 and 23, April 25 and May 22, 1912.*)

37644. LONICERA RUPRECHTIANA Regel. **Honeysuckle.**

"This shrub sometimes attains a height of 12 feet. The leaves are ovate lanceolate, acuminate, usually dark green above, grayish pubescent beneath, 2 to 4 inches long. The flowers are borne on rather long peduncles which are pure white at first and glabrous on the outside. The fruits make their appearance in May or June, and they are usually red but at times yellow. This species of Lonicera is much rarer than its hybrids with *L. tatarica.*" (*Bailey, Cyclopedia of American Horticulture.*)

37645. PRUNUS GRAYANA Maxim. **Bird cherry.**

"This species of Prunus occurs throughout the forest regions of Japan, and it is also frequently seen on the plains of Yezo. The flowers, which occur in racemes, make their appearance in early June and are followed in August by black fruits. In shape this species greatly resembles *P. padus*, the main difference being in the flowers, which are less fragrant." (*Bul. Acad. Imp. Sciences, St. Petersburg, vol. 29 (1884), p. 107.*)

"A native of Japan, where it is a small tree 20 to 30 feet high, with a slender trunk. This species is very closely allied to our common bird cherry (*Prunus padus*), differing chiefly in the leaves, which have no glands on the very short stalks (almost invariably present in *P. padus*), and in the teeth being finer and more hairlike. The white flowers are borne in erect racemes up to 4 inches long. Fruit black, about the size of peas, narrowing toward the apex. The species inhabits the mountain forests of the main island of Japan and the southern parts of Yezo. The true plant is very uncommon in cultivation." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 237.*)

37638 to 37646—Continued.

37646. PRUNUS MAACKII Ruprecht. **Manchurian bird cherry.**

"This species of Prunus, which is a native of the region around the lower Amur River, is a tree which attains a height of 35 feet. The young shoots have a glistening reddish brown bark, greatly resembling that of the ordinary cherry, which breaks and peels away from the branches in leafy flakes. The fruits of this species are black and about half the size of those of *Prunus padus.*" (*Bul. Acad. Imp. Sciences, St. Petersburg, vol. 15 (1857), p. 361.*)

"A Manchurian bird cherry, up to 40 feet or more high in a wild state; very distinct, through the bark of the trunk being smooth and of a striking brownish yellow color and peeling like that of a birch; young wood downy. The leaves are ovate, rounded at the base, pointed, very finely toothed; 3 or 4 inches long, by about half as wide; they are hairy on the midrib and veins, and are rendered very distinct by being covered with glandular dots on the lower surface. Raceme 2 to 3 inches long, springing from the previous season's wood; calyx tube cylindrical, bell shaped, the lobes glandular toothed; petals white, not so long as the stamens.

"Introduced to cultivation by way of St. Petersburg in 1910; the cultivated plants already show the distinct, smooth, yellowish trunk. It is different from ordinary bird cherries in the racemes coming on the year-old wood and from the laurels in being deciduous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 241–242.*)

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Issued September 15, 1917.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1914.

(No. 39; Nos. 37647 to 38665.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1914 (NO. 39; NOS. 37647 TO 38665).

INTRODUCTORY STATEMENT.

This inventory, which covers the quarter closing just before the outbreak of the European war, is the largest and contains the most variedly interesting plant material which has come in during any quarter since the Office of Foreign Seed and Plant Introduction was organized in 1898. It describes or lists 1,019 introductions, which is an average of more than 13 for each official working day, and a perusal of the notes will give a good idea of the world-wide operations of this office. It might be interesting to point out that a large amount of the material which is brought in is secured by the operations of an exchange system. During the year, for example, 537 shipments of seeds or plants were sent to official and special private experimenters abroad. The office is becoming, in fact, an international office of seed and plant exchange, which, in many instances, has been of as much value to foreign agriculturists as to the American farmer.

To look over such catalogues as this—of a thousand different plants—is, even to experiment-station men, so much of an undertaking that with the first inventory, published in 1898, the custom was established of mentioning in an introductory statement the more apparently promising and interesting introductions described. There are so many which deserve special mention in this one that the writer has attempted a rough classification of them.

CEREALS.

From the large number of cereals which have come in for trial or have been gathered for the monographic studies of experimenters with these crops, there might be mentioned the introduction of the

NOTE.—This bulletin is a record of new or little-known seeds or plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

two principal rice varieties of Tarragona, Spain (Nos. 37696 and 37697); a collection of South African wheats (Nos. 38618 to 38631), including the best Boer sorts adapted to the poor, unmanured lands of that region; 11 varieties of wheat (Nos. 38343 to 38353) which have been developed by the wheat breeders of the Department of Agriculture of New South Wales and are considered worthy of trial in our own Southwest; a selected Danish 2-rowed barley (No. 37706) and a 6-rowed variety (No. 37707), showing peculiar resistance to smut and leaf-spot, and a yellow spring oat of good quality (No. 37708), the results of selections carried on by breeders of the Royal Danish Agricultural Society of Copenhagen; the dwarf Black Grushevsk sorghum (No. 37733) from the farm of the Grand Duke Nicholas in the Ekaterinoslav Province of Russia, which is distinguished by early maturity, even in very cold summers, and is the best yielder of 20 sorts tested there; and a variety of maize (No. 38544) which is grown by the Panetes Indians of the upper Gy Parana (Machabo) River of Brazil, secured by Mr. Leo Miller, of the Roosevelt expedition, the first white man to visit the tribe.

FORAGE CROPS.

Of forage crops the most remarkable included in this inventory is that reported by Mr. J. B. Thompson, of the island of Guam, *Merremia hederacea* (Burm.) Hallier (No. 38647), a creeping plant of the morning-glory family, which appears to be more palatable to stock than any of the other forage plants on the island and is capable of being used continuously as pasturage. The Brazilian expedition of the office, composed of Messrs. Dorsett, Shamel, and Popenoe, during its stay in southern Brazil secured seeds or plants of 59 wild or cultivated forage grasses (Nos. 37983 to 38041). These will probably be of special interest to southern agriculturists. The Apitrèfle, or bee clover (No. 37937), a variety of red clover so named because the honeybees are able to collect nectar from its much shortened, more open flowers, sent by Prof. G. Martinet, of Lausanne, Switzerland, will interest bee men as well as agriculturists. Two annual species of clover from Budapest, *Trifolium angulatum* Waldst. and Kit. and *T. parviflorum* Ehrh. (Nos. 37681 and 37682), which remain dwarf in dry years, serving as pasturage, but grow high enough for hay on wet spots or in wet years, may possibly fit in with American requirements; and a wild type of Kentish white clover (No. 38579), which experiments at Armstrong College, Cockle Park, England, have shown is better than Dutch clover, may prove suitable for acclimatization here. Mr. Meyer found several hardy varieties of Chinese sugar cane (Nos. 38257 and 38332) at Chengchow and Kaifeng, in Honan Province,

which might be grown above the natural cane belt in the South and be useful for fodder, if not for sirup production. Whether or not an Italian rye-grass (No. 37709) of especially early-maturing habit, selected from single plants by the Royal Agricultural Society of Denmark, a meadow fescue (No. 37710) very resistant to the rust (Puccinia), and the orchard-grass variety "Olsgaard" (No. 37711), all from Copenhagen, will thrive in this country, where climatic conditions are so different, is a question to be determined by trial. With the exception of the Algaroba of Hawaii (Prosopis), forage trees seem to have made little progress in agriculture in the United States, and it is consequently a question whether the Jua tree of the caatinga land around Joazeiro, Brazil (No. 37923), a species of jujube, the leaves and the fruits of which are eaten by stock, will make a place for itself in this country.

NUT-BEARING TREES.

Two nut-bearing trees, the galo, *Anacolosa luzoniensis* Merrill (No. 38395), a Philippine species from the mountains of Cavite, with a kernel having the flavor of corn, and the k'uei li tzŭ (No. 37799), a superior large-fruited form of the blight-resistant Chinese chestnut, *Castanea mollissima* Blume, which Mr. Meyer found south of Sianfu, Shensi, are described in this inventory.

TIMBER, SHELTER-BELT, AND SHADE TREES.

Of trees for timber, windbreak, or shade purposes the following will be of interest: The true *Catalpa bungei* C. A. Meyer, first introduced in 1905 from Peking by Prof. Sargent, of the Arnold Arboretum, coming in through Mr. Meyer from Shansi (No. 38254), where, as he reports, it grows 100 feet in height and 10 to 15 feet in circumference, being planted by the Chinese for its strong, light, durable wood, which somewhat resembles black walnut in appearance, and another introduction of *Catalpa bungei* (No. 38419) from the Caucasus, where presumably it has been introduced from China; a quick-growing form of white poplar, *Populus tomentosa* Carr. (No. 38255), much planted by the Chinese for its timber; Fortune's Paulownia (No. 38184), which is used in China on sandy land as a soil binder and windbreak and produces very light wood; a 60-foot Himalayan birch, *Betula utilis* D. Don (No. 38287), which, though not hardy in Great Britain, may thrive in this country, where we have more sunlight; an English elm, *Ulmus hollandica vegeta* (No. 38492), of very vigorous, rapid growth, attaining 100 feet in height, a hybrid between *Ulmus glabra* Miller and *U. scabra* Miller, an old specimen of which may be seen at Mr. Walter Hunniwell's

noted place at Wellesley, Mass.; molave, *Vitex parviflora* A. Juss. (No. 37705), the forest tree producing one of the best high-grade building timbers in the Philippines; and the sycamore tree of the Bible, *Ficus sycomorus* L. (No. 37729), a long-lived tree much esteemed for its shade, which the Arabs beat to induce it to bear its inferior figs.

FIBER PLANTS.

Two fiber plants were brought from Brazil by the expedition sent there in October, 1913: The caroá, *Neoglaziovia variegata* (Arruda) Mez, from Joazeiro (No. 37794), a species of Bromeliaceæ growing wild in the caatinga lands along the Sao Francisco River and used by the natives for hammock ropes, and the piassava palm, *Attalea funifera* Martius (No. 37868), from Bahia, from the fiber of which most excellent brooms and brushes are made, while from the hard nuts buttons are manufactured.

VEGETABLES.

Of new vegetables there are a number of unusually interesting species. Mr. Wester sends from Manila a new variety of roselle (No. 37698) which matures 20 days earlier than the Victor variety and may be useful as a jelly producer farther north than the Victor can be grown; he directs attention also to a cucumber (No. 37700) introduced into the Philippines from Seharunpur, which has shown resistance to insect attacks and is proving to be one of the best sorts of cucumbers for trial in the Tropics; E. Webb & Sons, of Wordsley, England, have sent in No. 37807, which purports to be a hybrid between thousand-headed kale and kohl-rabi, a vegetable with a thickened stem growing 5 feet high, which is suitable for forage during the winter; Mr. Meyer has secured plants of the Chinese ginger (No. 38180), the candied rhizomes of which are shipped from China to America in great quantities; five varieties (Nos. 38356 to 38360) of the very best starch, table, and feeding potatoes of Polish origin, bred by the Polish plant breeder, Henry Dotowski, have been secured; from New Zealand has been brought in the New Era potato (No. 37947), which, according to J. G. Harris, of Raetihi, has not been affected by potato blight, whereas other varieties on either side of it have been blackened. What resembles closely the yampee yam of Jamaica, *Dioscorea alata* L. (No. 37943), seems to have secured a foothold at Avon Park, Fla., and is doing as well there, according to Mr. J. De Hoff, as the sweet potato. It deserves serious study. From the region about Coban, Guatemala, Mr. O. F. Cook, during his expedition there in 1914, sent seeds of the remarkable pacaya salad palm, *Chamaedorea* sp. (Nos. 38403 and 38404),

which produces from four to six large, fleshy, edible inflorescences, beginning with the third or fourth year. These inflorescences, or pacayas, are about the size of ears of sweet corn and when cooked make a delicate salad. It is believed that the species will grow in southern Florida.

FRUITS.

A remarkable number of new fruits and interesting varieties of our staple fruits are represented. Mr. Meyer has added to the list of those already introduced 24 new varieties of oriental persimmon, among these being 11 from Tongjapu (Nos. 37648 to 37658), including an especially valuable variety for drying purposes, which is used to make a dried-fruit product comparable to the dried fig; an improved variety of the *Diospyros lotus* L. (No. 37811) used for stocks in the orchards established on the loess table-lands, where they are subjected to an unusual amount of drought and alkali; five new forms of persimmon from Shensi Province (Nos. 37661 to 37665); the salt-bag persimmon and the honey-pot persimmon (Nos. 37672 and 37678), the latter no larger than a cherry, a prolific bearer, and very showy when loaded with fruit; five varieties from Shantung (Nos. 37948 to 37952), one of which is eaten pickled in brine. A staminate variety (No. 38482) has been found in Bermuda by Mr. Peter Bisset, which ought to be valuable as a pollenizer.

The importance of finding a blight-proof pear has induced Mr. Meyer to continue his search for a better flavored melting Chinese pear, and he has sent in from Shensi, Honan, and Shantung 15 varieties of more or less promise for breeding purposes (Nos. 38240 to 38242, 38262 to 38271, 38277, and 38278); and Rev. Hugh W. White has sent the Tangshan pear (No. 37982), the only pear he has seen that does not have a woody taste, but is sweet and juicy.

An ancient apricot variety (No. 37744), from the Dakhleh Oasis of Egypt, sent in by Prof. S. C. Mason during his expedition to Egypt and the Sudan in search of date varieties, may prove of value in our own desert region, since it is able to withstand an annual temperature of 75° and monthly means as high as 90° F.

The growing importance of the Chinese jujube as a fruit for the Middle West is emphasized by the receipt from Mr. Meyer of 14 large-fruited varieties (Nos. 38243 to 38247, 38249 to 38253, and 38258 to 38261), some with fruits as large as or larger than ordinary hens' eggs, being more like small pears. They can be eaten fresh, stewed with rice, baked, preserved with honey, sugar, etc., and Mr. Meyer reports in the neighborhood of Paihsiangchen an increasing area, which already amounts to several thousand acres, almost entirely given over to jujube culture.

A red-fleshed, large-fruited variety of Chinese haw (No. 38176), which can be kept for several months, was secured by Mr. Meyer. The famous Fei peach (No. 38178), imported once before by Mr. Meyer, but which died in transit, is now growing at our gardens from additional material which he obtained. It is considered the best peach in China and, because of its large size, lateness (middle of October), good shipping qualities, and aromatic flavor, may be a valuable addition to American commercial varieties.

Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, as a result of their expedition to Rio de Janeiro and Bahia, Brazil, sent in scions from 24 specially studied trees of the Bahia navel orange, selected because of their superior bearing capacity, uniformity of fruit, sweetness, general vigor, lack of spines, and a tendency to bear throughout the year. They also sent in the Selecta orange of Rio de Janeiro (Nos. 37796 and 37840 to 37842), a variety which has been under culture there for more than a hundred years and is now, because of its sprightly flavor, more extensively cultivated there than the navel orange, notwithstanding the fact that it contains seeds; the pear orange (Nos. 37797 and 37843), which bears in the off season of the Selecta pear-shaped fruits of good quality; the bitter orange, laranja da terra (No. 37775), and the seedy sweet orange, laranja da china (No. 37776), both of which are used as stocks for the navel orange in southern Brazil; and the lime orange (No. 37784), a variety highly esteemed for ades, having a flavor intermediate between that of an orange and a lime. Mr. Harry Boyle, who secured the Nakon Chaisri seedless Siamese pummelo (No. 37724), making a special trip to Bangkok from the Philippines, reports that it is not always seedless in Siam. The alamoen from Surinam (No. 37804), fruits of which were sent in by Mr. James Birch Rorer, of Trinidad, is a superior and very distinct variety of grapefruit with peculiarly juicy, tender flesh which does not squirt when one thrusts a spoon into it. The seedless pummelo (No. 37780) secured by the Brazilian expedition may also be of value.

Such citrus relatives as the desert kumquat, *Eremocitrus glauca* (Lindl.) Swingle (No. 37712), and *Atalantia monophylla* DC., from India and Ceylon (No. 38511), may be of great value in breeding new types of citrus trees.

Of more strictly subtropical fruits, the following are new to the United States: A wild, remarkably sweet fruit allied to the longan, *Euphoria cinerea* Radlk. (No. 38374), from Cavite Province, in the Philippines; four varieties (Nos. 38478 to 38481) of a Guatemalan fruit from Coban called the injerto, *Achradelpha viridis*, similar to but hardier and better than the sapote; the pitaya (No. 38601), a pleasant-flavored, deep-purple fruit produced by an epiphytic Cereus;

a rare species of Anacardium (No. 38209) from Cuba, related to the cashew, which might prove a good stock for that fruit; the fruta de condessa (No. 38171), an indigenous annonaceous fruit, *Rollinia deliciosa* Safford, from Rio de Janeiro; the guabiroba, *Campomanesia fenzliana* (Berg) Glaziou (No. 37834), a Brazilian myrtaceous fruit resembling the guava, but stronger flavored and highly esteemed for jellies; three new Eugenias with edible fruits, suited to culture in Florida (Nos. 37830 to 37832); the bright yellow-fruited *Rheedia brasiliensis* (Mart.) Planch. and Triana (No. 37802) from Rio de Janeiro, strongly resembling in taste the famous mangosteen; the imbu, *Spondias tuberosa* Arruda (Nos. 37861 to 37865), from Januaria, one of the most popular fruits of the interior of Brazil.

The most important addition to subtropical fruits, however, is doubtless that made by the Guatemala expedition under the charge of Mr. O. F. Cook, in the shape of 24 varieties of hard-shelled avocados (Nos. 38477, 38549 to 38564, 38578, 38581, 38583, 38587, and 38638 to 38640) collected in the region of Coban, Antigua, and the city of Guatemala, some of them at an altitude of 5,000 feet. As these ripen late, in the winter and spring, and are of good quality, some of them should be of special value in assisting the development of that remarkable new fruit industry which is rapidly getting on its feet in southern California and southern Florida.

MISCELLANEOUS PLANTS OF INTEREST.

The discovery of a new oil plant seems to have been made in the Ngart, *Plukenetia conophora* Muell. Arg. (No. 38644), a creeping plant from Kamerun, which is cultivated in the cornfields there and bears nuts the size of walnuts which contain 53.8 per cent of an oil similar to linseed oil, which is used for cooking and also as a drying oil. From the leaves of the carnauba wax palm, *Copernicia cerifera* Martius (No. 37866), a wax is secured that was formerly used for phonograph records. Their fruits are said to be an excellent hog feed, and a grove of palms for hog pasturage seems not to be an impossibility.

The Chia, a species of Salvia (No. 38048), from the swollen seeds of which, according to Purpus, the Mexicans make a refreshing drink which was used by the ancient Aztecs, should interest amateurs in the South, as well as the ava plant, *Piper methysticum* Forster (No. 38291), from which the South Sea Island kava is made. The true gum-arabic acacia, *Acacia verek* Guill. and Per. (No. 38524), from Khartum, may be capable of acclimatization in our southwestern desert region.

EDITORIAL NOTE.

Chinese place and plant names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 11, 1916.

INVENTORY.

37647 to 37678.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 2, 1914. Cuttings of the following, except as noted; quoted notes by Mr. Meyer unless otherwise indicated.

37647. SYRINGA sp. Oleaceæ. **Lilac.**

"(No. 1107. From Sianfu, Shensi, China. January 30, 1914.) A lilac of slender growth, the flowers of which are said to be of a peculiar deep shade of blue. Though the individual panicles are small, they are produced in such profusion as to make a striking impression. Obtained, like the cuttings listed under the preceding number, from the garden of the English Baptist Mission Hospital at Sianfu."

37648 to 37658. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From the village of Tongjapu [Tungchiaochen], near Fuping, Shensi, China. February 3, 1914.

37648. "(No. 1109.) A Chinese dry-meated variety of persimmon, of medium large size and round-oblong shape; color, dark orange-red; contains seeds as a rule. This variety is a good keeper and is also one of the best sorts for drying purposes. Chinese name *Ta kou tzŭ niu hsin shih tzŭ*, meaning 'big-hooked oxheart persimmon.' To obtain a superior quality of dried persimmons, the following method is used with this variety: In early October sound fruits are picked, which, although ripe, must still be hard. Care should be taken to have the peduncle with a piece of twig attached to each fruit. The fruits are peeled by means of a small, special knife, an average worker peeling 2,000 persimmons a day, though an expert brings it up to 3,000. The peeled fruits are tied, by means of their peduncles, to loosely twisted but strong strings, which hang in pairs vertically from horizontal beams put up especially for this work. From 200 to 300 fruits are tied to each string, the work of tying being started by putting a couple of fruits at the bottom first, so as to keep the strings taut, after which the work progresses from top to bottom. The fruits are now left hanging for about 20 days in a warm, sunny situation, where, if possible, the wind can also blow, but where there is freedom from dust. The persimmons should be squeezed and manipulated by hand every four or five days to assist them in drying uniformly and to prevent them from becoming hard in spots. After they have dried thus for about three weeks, they are taken down, strings and all, and a cool place is selected, where they are all put into a big heap and covered with matting. They are now allowed to sweat for 10 days, during which process a dry, white, powdery sugar forms on the surface of the fruits. When sufficiently cured they are hung up again for a couple of

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

days, preferably in the wind, to let them dry. Meantime the peelings have been carefully dried in the sun and kept in airy baskets. The fruits are now taken from the strings and put into baskets and jars with the dried peelings between and over them, and they are now ready for the consumer.

"Another method of drying, which is often practiced with the smaller varieties, is to run a knife point in a spiral or horizontal way through the skin of the fruits, then to put them in the sun on coarse matting. After they have been drying for several weeks they are thrown into a pile and covered with matting or sacking, allowing them to sweat. When through with this process they are ready for the market. Persimmons treated in this way are, as a rule, of a quality much inferior to those that have been given more care, but on the other hand they sell so cheaply that even coolies and beggars regale themselves on them.

"These dried persimmons are a most wholesome and pleasant food, comparing very favorably with dried figs, and often even preferable to them, being of less cloying sweetness and not possessing the multitude of objectionable small seeds. There are large sections in the United States, especially in the Southwest, where no doubt the dried-persimmon industry could be successfully established, and, with up-to-date methods of drying and curing, a much cleaner and probably superior article could be obtained than the product seen in China, and the nation would be richer by a new and wholesome food product. Besides these dried persimmons, the Chinese manufacture sugar, spirits, and vinegar from different varieties."

37649. "(No. 1110.) A Chinese variety of persimmon, said to be large, of flat shape with circular incisions, of orange color; seedless, having in some fruits furrows on the top. The fruits do not keep well, and they resist drying. Chinese name *Shêng ti shih tzŭ*, meaning 'measure-box persimmon.' This variety seems to be like the Tamopan."

37650. "(No. 1111.) A Chinese variety of persimmon, said to be large, of square, flat shape; of reddish color; partly seedless. A good keeper. Local name *Mu shih tzŭ*, meaning 'wood persimmon.'"

37651. "(No. 1112.) A Chinese variety of persimmon, said to be of small to medium size, of red color, with blotches here and there on the skin, seedless, and of very fine flavor. Local name *Chi hsin hung shih tzŭ*, meaning 'chicken-heart red persimmon.'"

37652. "(No. 1113.) A Chinese variety of persimmon, said to be of small to medium size, of rounded form, color red, partly seedless; can not be kept long, fresh or dried. Local name *Shan ko tan shih tzŭ*, meaning 'mountlike persimmon.'"

37653. "(No. 1114.) A Chinese variety of persimmon, said to be small, of round-oblong shape, red, seedless. Good only when fresh. Local name *Chi chien hung shih tzŭ*, meaning 'tongue-point red persimmon.'"

37654. "(No. 1115.) A Chinese variety of persimmon, said to be small, of round-oblong shape, color orange-red, partly seedless;

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

can not be dried or kept long. Local name *Mao chien shih tzŭ*, meaning 'hairy point persimmon.'"

37655. "(No. 1116.) A Chinese variety of persimmon, said to be medium large, of flattened, square shape, with four vertical furrows, of orange-red color, partly seedless; can not be dried or kept long. A rare variety. Local name *Pan shih tzŭ*, meaning 'flat persimmon.'"

37656. "(No. 1117.) A Chinese variety of persimmon, said to be small, of round-oblong shape, with furrows running vertically; color yellowish red; partly seedless; can not be dried or kept long. Local name *Shui shih tzŭ*, meaning 'water persimmon.'"

37657. "(No. 1118.) A Chinese variety of persimmon, said to be small, of round-oblong form, color bright red, seedless; can be kept fresh for a long time. Local name *Huo kuan shih tzŭ*, meaning 'fire-pot persimmon.' This variety and other small sorts are sometimes put into jars with fresh water for a couple of weeks, after which treatment they have acquired quite a different taste, losing much of their sweetness and often being just a little tart."

For an illustration of the fruit of the fire-pot persimmon, see Plate I.

37658. "(No. 1119.) A Chinese variety of persimmon, said to be small, of yellowish color, having many seeds. Thought to be a hybrid between *Diospyros kaki* and *D. lotus*. Local name *Ssŭ pu hsiang shih tzŭ*, meaning 'different persimmon.'"

37659. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 1123. From village of Shiyapu, Shensi, China. February 4, 1914.) A variety of jujube having large fruits of barrel shape, of a beautiful light-brown color. Can be eaten fresh or put up in weak brandy; a really fine-looking jujube. Chinese name *Ma lien tsao* (Ma lien jujube), referring to the supposed fact that this jujube resembles the flower bud of a terrestrial orchid, with brownish flowers (*Cymbidium* sp.)."

37660. THUJA ORIENTALIS L. Pinaceæ. **Arbor vitæ.**

"(No. 1127. From near Chaoyi, Shensi, China. February 7, 1914.) A globular form of the oriental arbor vitæ, of very dense growth. Valuable as an appropriate tree for cemeteries and for places of dignity. *Thuja orientalis* is one of the most beloved trees of North China and is much planted in temple courts and on burial grounds. It withstands an astonishing amount of drought, neglect, and alkali, and it may be of special value to certain sections of the United States."

37661 to 37665. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From the village of Yukotsun, near Puchowfu, Shansi, China. February 8, 1914.

37661. "(No. 1129.) A Chinese variety of persimmon, said to be large, of flat, square shape; of reddish color; partly seedless. Excellent for drying purposes. Is of such good quality when dried that formerly a shipment was made every winter to the imperial court at Peking. Sells locally at 1 mace of silver per catty (7 cents gold for 1⅓ pounds). Local name *Ch'ing shih tzŭ*,

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

meaning 'green persimmon.' It is curious to note that the Chinese say that the higher one can go into the mountains and the nearer to the limit of successful culture, the better flavored the persimmon fruit becomes and the more bountiful the crops, even though the trees are not so large as on the plains and are not as long lived. In this way the persimmon seems to resemble the peach remarkably closely."

37662. "(No. 1130.) A Chinese variety of persimmon, said to be large, of round-oblong shape, color reddish, partly seedless. Supplies a superior product when dried; can also be kept fresh for a long time. Local name *Niu hsin ta shih tzŭ*, meaning 'oxheart big persimmon.'"

37663. "(No. 1131.) A Chinese variety of persimmon, said to be of medium size, barrel shaped, and of yellow color; contains seeds; a good keeper, but not suitable for drying. Local name *Lou hu shih tzŭ*, meaning 'basket-jar persimmon.'"

37664. "(No. 1132.) A Chinese variety of persimmon, of small to medium size, of flattened round shape with top regularly sunken, and of orange color; partly seedless; can be kept fresh throughout the winter when stored in a cool place. Does not dry well. Chinese name *Ching mien shih tzŭ*, meaning 'mirror-face persimmon.' The Chinese around Puchowfu cultivate several hundred acres of this variety, solely for the purpose of distilling a brandy from the fruits, which possesses a slightly bitter flavor. With western methods, no doubt a superior sort of spirits could be made from the persimmon, or even perhaps an alcohol, fit for household uses."

37665. "(No. 1133.) A Chinese variety of persimmon, said to be small, of round shape, color reddish; partly seedless; can be dried and also kept fresh for a long time. Local name *P'ing shih tzŭ*, meaning 'flat persimmon.'"

37666 and 37667. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From the village of Kenyangtchun, near Puchowfu, Shansi, China. February 10, 1914.

37666. "(No. 1134.) A Chinese variety of persimmon, said to be very large and heavy, of flat shape, slightly furrowed; color reddish; seedless; of fine quality either fresh or dried. Local name *Ch'ing shih tzŭ*, meaning 'green persimmon.' This may turn out to be the same as No. 1129 [S. P. I. No. 37661]."

37667. "(No. 1135.) A Chinese variety of persimmon, said to be large, of round shape, with the tops well rounded off; color reddish; contains seeds; can be dried well, supplying a good product. Local name *K'uei shih tzŭ*, meaning 'crown persimmon.'"

37668. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

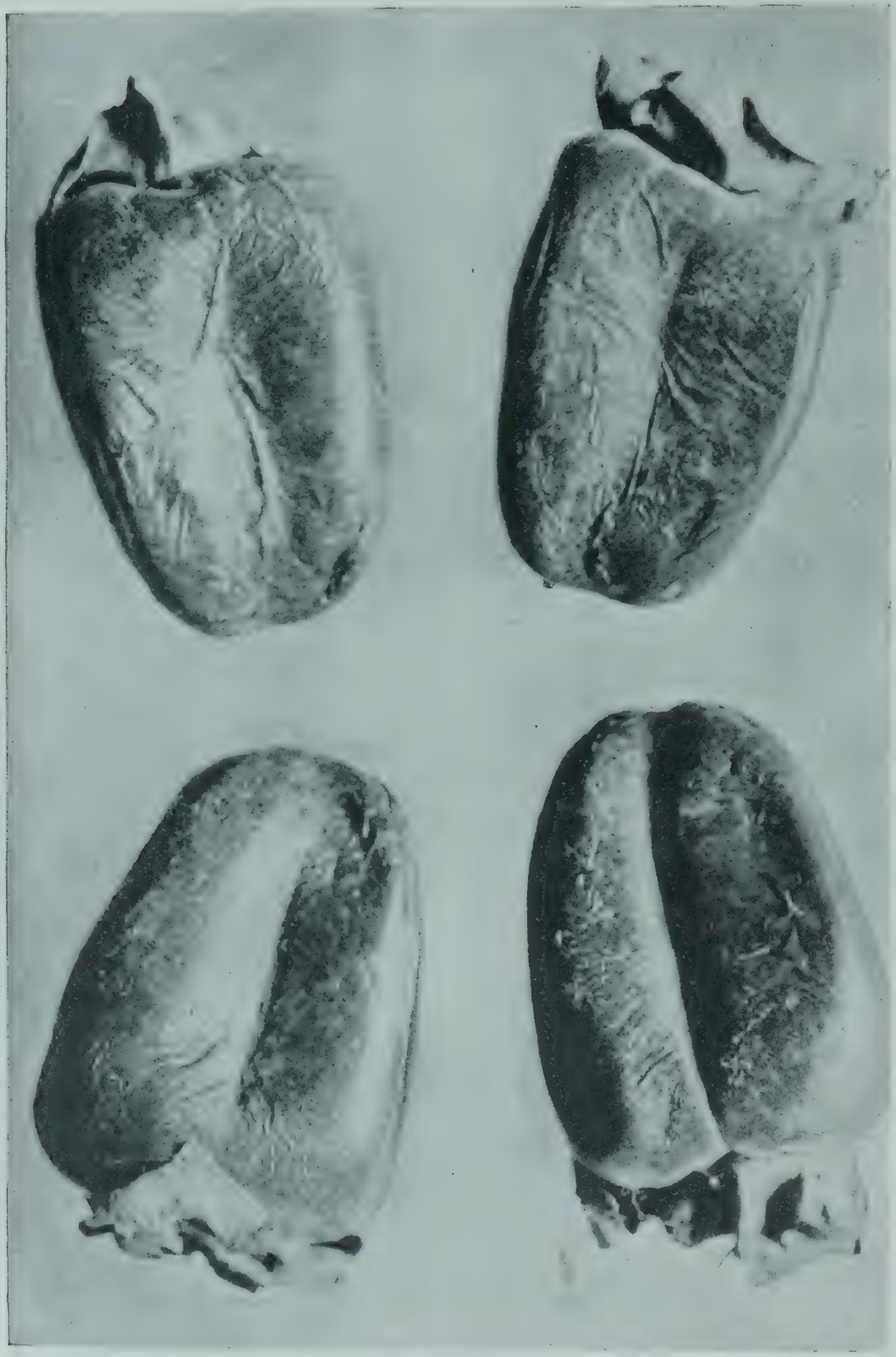
"(No. 1139. From near Puchowfu, Shansi, China. February 10, 1914.) A variety of jujube bearing large fruits of round-oblong form, color dark mahogany brown. Good for drying, as well as for eating fresh. Chinese name *Ta tsao*, meaning 'big jujube.'"

37669 and 37670. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From the village of Wangyuko, Shansi, China. February 15, 1914.

THE "FIRE-POT" PERSIMMON (DIOSPYROS KAKI L. F.), S. P. I. NO. 37657.

A very small variety of persimmon of dark reddish color, resembling an intermediate form between a Persian date and a plum. Locally called *Huo kuan shih tzŭ*, meaning "fire-pot" persimmon. The fruits can be kept fresh almost throughout the entire winter, but the Chinese also eat them slightly fermented by keeping them in water for a few weeks and pouring off the water every few days. Their flavor reminds one of beer, and travelers relish them decidedly. (Photographed at Paihsiangchen, Shansi, China, by Frank N. Meyer, February 14, 1914; natural size; P13044FS.)



THE "SALT-BAG" PERSIMMON (DIOSPYROS KAKI L. F.), S. P. I. No. 37672.

A very unusual form of oriental persimmon, being square, elongated and tapering, and having four vertical furrows. Of pale, orange-yellow color; seedless; calyx very large and strongly persistent. Can be kept fresh for several months. On account of its attractive and striking form and color this variety may become a great favorite with the American public. Chinese name *Yen pu tai shih tzŭ*, meaning "salt-bag" persimmon. (Photographed at Mienchih, Honan, China, by Frank N. Meyer, February 22, 1914; natural size; P13046FS.)

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

37669. "(No. 1153.) A Chinese variety of persimmon, said to be of small to medium size, of oblong tapering form, with longitudinal furrows; of orange-red color; contains seeds; good only when fresh. Local name *Niu nai shih tzŭ*, meaning 'cow's-nipple persimmon.'"

37670. "(No. 1154.) A Chinese variety of persimmon, said to be much like the preceding, but of somewhat different shape. Bears the same name."

37671. ULMUS sp. Ulmaceæ. **Elm.**

"(No. 1156. From the village of Maochingchen, Shansi, China. February 16, 1914.) A species of elm, occurring in dry loess cliffs and in decomposed slate rocks. In general, of a shrubby nature, but, when not disturbed, growing to a medium-sized tree. The young branches are often provided with broad corky wings, making them appear much thicker than they really are. Of value possibly as a park tree, especially for the drier parts of the United States."

Cuttings and roots.

37672 to 37678. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From near Mienchih, Honan, China. February 21, 1914.

37672. "(No. 1157.) A Chinese variety of persimmon, of remarkable form, being of square, oblong shape, tapering toward the apex and having hairy, vertical furrows; of medium size; color, pale orange-yellow; calyx very large; seedless. Can be kept fresh for several months. A really beautiful persimmon, which will probably become very popular with the American people. Local name *Yen pu tai shih tzŭ*, meaning 'salt-bag persimmon.'"

For an illustration of the fruit of the salt-bag persimmon, see Plate II.

37673. "(No. 1158.) A Chinese variety of persimmon, said to be large, of round, flat shape and of red color; partly seedless; can be dried and also kept fresh for a long time. A superior variety. Local name *Yü kuei lun shih tzŭ*, meaning 'globular persimmon.'"

37674. "(No. 1159.) A Chinese variety of persimmon, said to be very large; of round shape, with top running into a point; of red color; partly seedless; can be dried or kept fresh for a long time. Local name *Ta ou hsin shih tzŭ*, meaning 'big pointed-heart persimmon.'"

37675. "(No. 1160.) A variety of Chinese persimmon, said to be medium large; of round shape, although very flat; color, red; partly seedless; good only when fresh. Local name *P'ai p'ai shih tzŭ*, meaning 'pounded persimmon.'"

37676. "(No. 1161.) A variety of Chinese persimmon, said to be large, of square, flat shape, and having two furrows on top, in the form of a Maltese cross; color, red; seedless; can be kept fresh for a long time, but resists drying. Local name *Chia hsien hung shih tzŭ*, meaning 'pick-fresh red persimmon.'"

37677. "(No. 1162.) A Chinese variety of persimmon, said to be of medium size and of oblong, tapering form, with pointed top; color, yellow; seedless. For fresh use only. Local name *Pa yüeh huang shih tzŭ*, meaning 'eighth-moon yellow persimmon.'"

37647 to 37678—Contd. (Quoted notes by Mr. F. N. Meyer.)

37678. "(No. 1163.) A Chinese variety of persimmon, the fruits of which are said to be of the size of large cherries, quite round; of beautiful red color; very sweet, but full of seeds. The trees grow tall and are prolific bearers and very showy when loaded with ripe fruits. Local name *Mi kuan shih tzŭ*, meaning 'honey-pot persimmon.'"

37679 and 37680.

From Sianfu, Shansi, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., March 18, 1914.

37679. PHYLLOSTACHYS sp. Poaceæ. **Bamboo.**

"(No. 1075. January 13, 1914.) A bamboo growing to 15 to 20 feet in height, having green stems which have but a small air channel in them. Foliage more or less in bunches and quite dense. Of value as an ornamental garden plant for the mild-wintered sections of the United States. Especially valuable as a windbreak. Chinese name *Tung po chu*, meaning 'the bamboo of Tungpo.'" (*Meyer.*)

Plant.

37680. PRUNUS TOMENTOSA Thunberg. Amygdalaceæ. **Bush cherry.**

"(No. 1080. January 13, 1914.) A variety of bush cherry said to bear small white fruits, rare locally. To obtain the best results, the Chinese bud and graft this bush cherry on *Amygdalus davidiana*, usually low in the ground, but often also budded high as 'standard' trees. Chinese name *Pai ying t'ao*, meaning 'white cherry.'" (*Meyer.*)

37681 and 37682. TRIFOLIUM spp. Fabaceæ. **Clover.**

From Hungary. Presented by Mr. E. Brown, Botanist in Charge of the Seed Laboratory, Bureau of Plant Industry. Received April 15, 1914.

Dr. A. Degen, of the Royal Hungarian Seed-Testing Station at Budapest, Hungary, says of these clovers:

"These species really form a valuable constituent of our pastures and meadows. *Trifolium angulatum* and *T. parviflorum* grow in our lowland plains almost always in company on alkaline heavy clay soils. They are both annual plants, and only in wet years or on wet spots attain a height which allows an abundant hay crop. Under other circumstances they remain dwarf and yield only a short but very valuable hay, and are therefore principally useful as pasturage. They are both very early plants, their chief period of development being from the middle of April to the middle of June.

"These clovers have a cultural value only on alkaline, somewhat humid soils, and are not suitable for others or for culture under different climatic conditions."

37681. TRIFOLIUM ANGULATUM Waldst. and Kit. Fabaceæ.

37682. TRIFOLIUM PARVIFLORUM Ehrh. Fabaceæ.

37683. MALUS SYLVESTRIS Miller. Malaceæ. **Apple.**

(*Pyrus malus* L.)

From Saloniki Greece. Presented by Rev. P. H. House, president, Thessalonica Agricultural and Industrial Institute. Received April 24, 1914.

"Tetovo apple.

37683—Continued.

"Tetovo is the Bulgarian name of the town of which Kalkundeleu is the Turkish name; *Tetovsky* is the adjective, meaning 'from Tetovo.'" (*P. H. House, letter dated June 5, 1914.*)

37684. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Peking, China. Received at the State Department in a pouch from Peking, China. Received March 20, 1914.

"This variety is probably the kind asked for in your letter under the name of the 'white-eyed' soy bean. It is known as 'the large white eyebrow bean' among the Chinese where it is grown." (*Source unidentified.*)

37685. CANARIUM OVATUM Engler. Balsameaceæ. **Pili nuts.**

From Manila, Philippine Islands. Presented by Mr. O. W. Barrett, chief, Division of Horticulture, Bureau of Agriculture. Received March 31, 1914.

"The pili is a forest tree producing an excellent table nut." (*Barrett.*)

37686 to 37691.

From Tiflis, Caucasus. Presented by the director, Botanic Gardens. Received March 30, 1914.

37686 to 38688. PRUNUS spp. Amygdalaceæ.

37686. PRUNUS MICROCARPA Meyer. **Cherry.**

See S. P. I. No. 27303 for previous introduction and description.

37687. PRUNUS PROSTRATA Labill. **Bush cherry.**

See S. P. I. Nos. 28945, 30564, and 37642 for previous introductions and description.

37688. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider.

See S. P. I. No. 37463 for previous introduction and description.

37689. PYRUS NIVALIS ELAEAGRIFOLIA (Pall.) Schneider.

"This wild olive-leaved Pyrus, which is a native of Asia Minor, is a distinct bush or small tree greatly valued for ornamental purposes. The flowers of this beautiful Pyrus, which are white and small, make their appearance in May. The fruit is small, globose in shape, crowned with a very prominent calyx. The leaves are lanceolate, oblong lanceolate, or linear lanceolate, and covered with a whitish, silky pubescence." (*Nicholson, Dictionary of Gardening.*)

37690 and 37691. FRAGARIA spp. Rosaceæ. **Strawberry.**

Introduced for the work of the Office of Pomological and Horticultural Investigations in plant breeding.

37690. FRAGARIA VESCA L.

This common species of Fragaria, which is commonly known as the "wildwood strawberry," is very widely dispersed over the temperate and colder parts of the Northern Hemisphere, extending northward to Lapland and Iceland, southward to the mountains of Java, ascending the Himalayas to 13,000 feet and the Scottish highlands to 7,000 feet. The fruit of this species is borne above the leaves. Sometimes they are as much as 12 inches above the ground. This Fragaria is a stout, tufted plant, dark green in color and less vil-

37686 to 37691—Continued.

lous than either *F. canadensis* or *F. virginiana*. (Adapted from *Mueller, Select Extra-Tropical Plants* and *Britton and Brown, Flora of the Northern States and Canada.*)

37691. FRAGARIA VIRIDIS Duchesne.
(*Fragaria collina* Ehrh.)

"This Fragaria, though not identical with *F. vesca*, resembles it very closely and may be regarded as a mere variety of that European species. Under the name of 'hill strawberry' it occurs in various parts of Europe and is cultivated to some extent in Norway as far north as latitude 67° 56′. The fruit of this species has a somewhat musky odor." (*Mueller, Select Extra-Tropical Plants.*)

37692 to 37695. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Waimea, island of Kauai, Hawaii. Collected August 16, 1913, by Mr. R. A. Young, of the Bureau of Plant Industry. Tubers of the following; quoted notes by Mr. Young.

37692. "*Kumu.* A rare variety of the Hawaiian taro, having brilliant red petioles. The name *Kumu* is said to have been given because of the similarity of color to that of the Hawaiian fish of the same name. The variety is unimportant commercially. There are others of this class, varying from this one in certain details."

37693. "*Apuwai ulaula.* A commercial variety of the Hawaiian taro, the leaf blades of which curl upward, forming a cuplike receptacle which holds water. The name *Apuwai* signifies this character of the leaf."

37694. "*Lau loa.* Leaf blade long, petiolar spot purple; laminar sinus closed about one-fourth of distance; petiole dark green below, shaded with maroon, shading into solid dark maroon above the sinus, except on the outer side, where it becomes light green; petiolar sinus wings margined with red."

37695. "*Maka opio.* A commercial variety grown on the island of Kauai. Leaf characters similar to the preceding [S. P. I. No. 37694]."

37696 and 37697. ORYZA SATIVA L. Poaceæ. Rice.

From Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received March 25, 1914.

"The principal region where rice is grown on an extensive scale in this consular district is in the Province of Tarragona, on the right bank of the Ebro River, and in the tract commonly known as 'Amposta.' The total production in the district named amounted to 29,750 long tons during the year 1913, cultivated over an area of 8,500 hectares (21,004 acres), giving an average production of 3½ tons per hectare (2.47 acres). In the Province of Gerona and in the Balearic Islands rice is also cultivated, but not in quantities of commercial importance. Here the production in 1913 was 8.43 and 7.59 tons, respectively.

"The Province of Valencia is the most important rice-growing center in Spain, the average annual crop amounting to some 200,000 long tons. Rice as a popular food enters into the diet of the people to such an extent that the

37696 and 37697—Continued.

home production is not sufficient to meet the demands, and regular imports are made, varying in accordance with the crop obtained.

"The two principal varieties of rice cultivated on the banks of the Ebro River, in this particular consular district, are commonly known as Benlloch and Bomba; the latter variety is also grown in the Balearic Islands.

"Rice sowing in this district takes place about the end of March and the beginning of April. The harvesting season begins in the latter part of August and continues into early September, under normal weather conditions. A considerable portion of the labor is done by peasants from Valencia, who go to the Tarragona rice fields during the sowing and harvesting seasons.

"An authority states that the cost of planting, preparing the land, transportation to warehouse, drying, rent of land, thrashing, wages, and incidental expenses, aggregate $123.10 for an acre producing 50 hectoliters (141.88 bushels) of unshelled rice, which is sold at $2.70 per hectoliter (2.83 bushels), making a gross profit of $135 and a net earning of $11.90 for each 50 hectoliters of rice obtained. For sown rice, which is the method principally resorted to in Spain on account of larger profits, the outlays would approximate $90.90, and the yield would come to 44 hectoliters (124.86 bushels) of unshelled rice. In the latter instance the net profits would, therefore, amount to $27.90." (*Report, February 18, 1914.*)

37696. "*Bomba.*"

"The ruling wholesale prices, which are subject to considerable fluctuation, run at present as follows: Shelled, $11.20 to $13.70 per 100 kilograms; unshelled, $6.50 to $7.20 per 100 kilograms."

37697. "*Benlloch.*"

"The ruling wholesale prices, which are subject to considerable fluctuation, run at present as follows: Shelled, $6.85 to $7.75 per 100 kilograms (220 pounds); unshelled, $4.70 per 100 kilograms."

37698 to 37705.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received March 31, 1914. Quoted notes by Mr. Wester, except as otherwise indicated.

37698. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

"*Temprano* roselle. A variety that has originated at this station as a sport from *Victor*. The *Temprano* is less vigorous than its progenitor, but has the merit of being 20 days earlier, and if it retains this characteristic in the United States, it should become of considerable value."

37699. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. Winged bean. (*Psophocarpus tetragonolobus* DC.)

"*Seguidilla.* Climbing beans with 4-winged pods, which, used as string beans when they are tender, are of excellent quality. They should be of great value in Porto Rico and Panama, but the soil is too poor in Florida. I tried them for two seasons in Miami, Fla., but they were not a success. The seed should be planted in April or May. The plant does best in rich, rather moist, but well-drained land."

37700. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

"*India* cucumber. A cucumber especially adapted to the Tropics, introduced from India.

37698 to 37705—Continued. (Quoted notes by Mr. P. J. Wester.)

"Size large, 22 to 30 cm. long, averaging 26 cm. in circumference; average weight, 850 grams; form oblong, cross section more or less triangulate; color brown, the surface cracking as the cucumber attains maturity, exposing the flesh and giving it the appearance of being reticulated; surface fairly smooth; flesh perhaps somewhat less tender than the standard cucumbers of the Temperate Zone, nevertheless very good; seed abundant.

"The seed of this variety was presented to the Bureau of Agriculture by Mr. A. C. Hartless, superintendent of the Seharunpur Botanical Garden, United Provinces, India, in 1911, and was sown at the end of the rainy season the same year at the Lamao Experiment Station. From the seed saved, another sowing was made in January, 1913, together with a large number of imported varieties of cucurbits of all classes. In this trial the *India* showed itself hardier and superior to all the cucurbits planted in the resistance to insect pests, which practically destroyed the rest, notwithstanding frequent applications of arsenical sprays. The variety is of vigorous growth and a satisfactory yielder and is unquestionably one of the best varieties adapted to local conditions, everything taken into consideration, that has been introduced into the Philippines. A large area has lately been planted to *India* at the Lamao Experiment Station, with a view to producing seeds for general distribution throughout the Philippines another year. India is the original home of the cucumber, and the variety under consideration seems to be an improvement upon the aboriginal form that is especially adapted to tropical conditions. According to Mr. Hartless this cucumber is grown throughout India as a climber, during the rainy season. Notwithstanding its extensive cultivation in India it is a curious fact that this distinct cucumber variety has never received a variety name. Coincident to its wide dissemination throughout the Philippines it has therefore been considered expedient to christen the variety in order to distinguish it from other varieties, and it has been named *India*, in honor of the ancestral home of the cucumber." (*Wester, Philippine Agricultural Review, February, 1914.*)

37701 and 37702. DIOSCOREA spp. Dioscoreaceæ. **Yam.**

37701. DIOSCOREA PENTAPHYLLA L.

"*Lima-Lima.* An edible yam, though inferior in quality to *Dioscorea alata* and *D. fasciculata.* It should prove a very interesting climbing ornamental in the Tropics and in the subtropical regions of the United States."

37702. DIOSCOREA ACULEATA L.

"*Tugue.* This species occurs in many varieties, from a culinary point of view. These are some of the very best, mealy, with a trace of sugar. From my experience with yams in Miami, Fla., I do not believe that the *Tugue* will succeed there, but it should do very well in Porto Rico and Panama."

37703. SINDORA SUPA Merrill. Cæsalpiniaceæ.

"A tree reaching a height of 25 m. and a diameter of 140 cm. with equally pinnate leaves, coriaceous glabrous leaflets, and densely pubescent calyx lobes which have a few straight or curved spines on the upper half. Branch and branchlets glabrous. Leaves with a glabrous rachis, 6 to 7 cm. long; stipules foliaceous, 1 cm. long, acute, the base rounded

37698 to 37705—Continued. (Quoted notes by Mr. P. J. Wester.)

or auriculate, glabrous or nearly so; leaflets 2 or mostly 3 jugate, the lower pair somewhat smaller than those above, oblong ovate, 5 to 8 cm. long, 2.5 to 4 cm. wide, very coriaceous, entirely glabrous or with few scattered hairs on the under surface, especially on the midrib, the apex rounded, the base acute; nerves numerous, close, faint; petiolules 4 mm. long, acute, pubescent; pedicels 2 mm. long, each with two lanceolate acute pubescent bracteoles 4 mm. long. Calyx tube short, the lobes four, thick, 1 cm. long, densely pubescent within with appressed yellowish hairs, outside densely cinereous puberulous and in the upper half with a few straight or curved pubescent spines about 3 mm. long. Petal one, as long as the calyx lobes, densely appressed pubescent on the margins below. Staminal sheath and filaments hairy. Ovary hirsute. Pod broadly ovate, flattened, rounded at the base, the apical beak very small or nearly obsolete. Valves dehiscent, woody, uniformly armed on the outside with strong straight spines 5 mm. long and more or less densely ferruginous pubescent, becoming quite glabrous in age. Seeds usually four, ovate, hard, black, with an arillate funicle.

"A species related to and previously identified with *Sindora wallichii* Benth. (*S. wallichiana* Benth.), of the Malayan Peninsula, differing from that species in its glabrous leaves and larger pods. Dr. Prain, director of the Royal Botanic Gardens, Kew, has examined some of the material cited above and informs me that this species is not identical with Bentham's *S. wallichiana*. I have accordingly described the Philippine plant as a distinct species, using for the specific name the Tagalog name *supa*, by which this important timber tree is universally known in the Philippines. The timber of this tree is hard and of a yellowish or reddish color, being used in naval and general constructions, and is frequently substituted for the more valuable *ipil* wood (*Intsia bijuga* O. Ktze). From 1900 to 1904 *supa* ranked fourteenth in amount received in the local lumber markets, with a total of 177,189 feet board measure, its average price for sawed lumber being $81.50, United States currency, per 1,000 feet b. m. In addition to being a valuable timber tree, *supa* also yields considerable quantities of a straw-colored or light-yellow, somewhat fragrant oil, which burns with a clear flame. From a report submitted to the Chief of the Forestry Bureau by Mr. Kobbe, forester, the following extracts are taken: 'This oil (*supa*) is secured from the trunk of the living [tree] and not from the fruit or dead wood. The tree is usually hacked with bolo cuts as high as a man can reach, and the oil runs down the channels so formed into some vessel so placed as to catch the product. The oil seems to be a product of the entire woody portion of the tree and does not flow from any particular portion, such as the sapwood only. If an auger hole be bored into the heart of a living tree, as much as 10 liters of oil is frequently obtained from the one hole. When the trees are slashed for gathering the oil, the first that exudes is set on fire, the heat causing a great increase in the flow of oil.' The oil is not widely used. There is a demand for it for the manufacture of paint, especially for use on ships, varnish for sailboats, etc., and as an illuminating oil. Tagalog, *supa*, in Baler; also *manapo*." (*E. D. Merrill, Philippine Journal of Science, vol. 1, suppl., p. 198, 1906.*)

37704. ORMOSIA CALAVENSIS Azaola. Fabaceæ. **Bahai.**

"A timber tree of more or less value in the Philippines."

37698 to 37705—Continued. (Quoted notes by Mr. P. J. Wester.)

"*Bahai* is a medium-sized tree found very scattered in the dipterocarp forest. The wood is red, but is little known on the markets." (*H. N. Whitford, Forests of the Philippines, vol. 2, p. 43, 1911.*)

37705. VITEX PARVIFLORA A. Juss. Verbenaceæ. **Molave.**

"A timber tree of more or less value in the Philippines."

"*Molave* is a tree that in exceptional cases will reach a height of 35 to 38 meters and a diameter up to 200 centimeters, with a bole 16 to 20 m. Usually, however, it is below 30 m. and may form in severe conditions a scraggly tree with a bole 2 m. or less in length. The bole is usually crooked, fluted, and buttressed. It has an open wide-spreading crown. It is found throughout the [Philippine] Islands, especially on the low coastal hills, usually on limestone, but may occur on volcanic rocks. It is intolerant of shade, and partially or wholly deciduous during the dry season. The bark is 8 to 10 mm. in thickness, yellowish brown to gray in color, velvety to the touch, sometimes shedding in small thin flakes; otherwise smooth. The inner bark is light yellow, with darker yellow rings when freshly cut, but rapidly turning brown on exposure. The leaves are opposite, usually trifoliately compound; the leaflets are smooth and vary in size from 5 to 15 cm. long and 2.5 to 7 cm. wide. The sapwood is creamy white; the heartwood a pale yellow, often turning to dull brown on exposure. It has a fine, usually cross grain, with short and brittle fibers, making it easy to work. It is hard and heavy. It turns greenish yellow when treated with an alkali, and has a bitter taste and a slight odor. It stains water a greenish yellow color. *Molave* is one of the best high-grade construction timbers in the islands and is a good substitute for teak. It resists well the action of fungi, teredo, and white ants. The following is an enumeration of its uses: House construction (posts, doors, interior finish, flooring, joists, siding, sills), shipbuilding (knees, cutwater, sternposts), wagon making (axles, wheels, rims, spokes), bridges, cabinetmaking, carabao yokes, cogwheels, docks, salt-water piles, pillars, plows, rice mortars, railroad ties, sugar mills, paving blocks, furniture, balusters and other turned work, hemp presses, sculpture, wooden tools, plane stocks, and tool handles. Practically all the Provinces in the Philippines contain *molave*, though in many it is no longer in commercial quantities." (*H. N. Whitford, Forests of the Philippines, p. 97, 1911.*)

37706 to 37711.

From Copenhagen, Denmark. Presented by the Royal Danish Agricultural Society. Received April 2, 1914. Quoted notes furnished by the society.

37706 and 37707. HORDEUM spp. Poaceæ. **Barley.**

37706. HORDEUM DISTICHON NUTANS Schubl.

"No. 3. *Prentice* barley of Tystofte; 2-ranked barley. Originally from a single plant of the primitive species from England, and grown by Mr. N. P. Nielsen at the Tystofte Experiment Station. The most widely known species of barley in Denmark. A little late. The blade does not grow very long. Good quality of grain. Resists well attacks of *Helminthosporium gramineum* and smut (Ustilago). Gives a large crop. Should be sown early and relatively thin. Thrives especially well in good soil."

37706 to 37711—Continued.

37707. HORDEUM VULGARE L.

"No. 4. Tystofte cruciferous barley (*Tystofte korsbyg*); common barley with six ranks (square). Originally from a single plant grown by Mr. N. P. Nielsen at the Tystofte Experiment Station. Late, essentially with large grains. Resists well *Helminthosporium gramineum* and smut (Ustilago). Gives a large harvest of grain and straw. Should be sown early. Thrives especially well in good soil."

37708. AVENA SATIVA L. Poaceæ. **Oat.**

"No. 6. Yellow Naesgaard oats (*Gul Naesgaard Havre*); spring oats. Originally from a single plant of *Beseler* oats grown by Mr. H. A. B. Vestergaard at the Abed Experiment Station. The chaff is yellow; hence the name. Weight of grain and volume very high. Straw stiff and large quantities obtained. The land should be strongly fertilized and seed should be sown early."

37709. LOLIUM MULTIFLORUM Lamarck. Poaceæ. **Italian rye-grass.**

"No. 11. Italian rye-grass; Tystofte No. 152. A subvariety grown by Mr. N. P. Nielsen at the Tystofte Experiment Station from a single plant. Of very early maturity, with ample and leafy stalk growth. Thrives especially well on nonpermanent pasture land. Gives large and sure harvests not only at the first mowing, but also in the second growth."

37710. FESTUCA ELATIOR L. Poaceæ. **Meadow fescue.**

"No. 12. Meadow fescue; subvariety No. 9 of L'Union des Sociéties Coopératives de Consommation de Danemark, and grown by Mr. Karl A. Jorgensen, Lyngby, from a single plant. A little late, very resistant to rust (Puccinia). Gives large and sure harvests, especially on the first mowing. Thrives only in pasture land, which should remain more than one year in grass."

37711. DACTYLIS GLOMERATA L. Poaceæ. **Orchard grass.**

"No. 13. Orchard grass; subvariety Olsgaard. Grown by Mr. Rasmussen, Olsgaard. Resembles in appearance and its early-maturing qualities the American orchard grass. Gives large harvests. Thrives only in pasture land, which should remain more than one year in grass."

37712. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ.

(*Atalantia glauca* Benth.) **Desert kumquat.**

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, Brisbane Botanic Gardens. Received January 22, 1914.

"From the experiment station at Dulacca. The people in the district are using quantities of them for drinks." (*Jean White.*)

"A shrub or small tree bearing edible fruits and occurring in Queensland and New South Wales, Australia, in subtropical regions subject to severe cold and extreme drought. The leaves of the plant are small (1 to 1½ by one-eighth to one-fourth inch), emarginate, and show marked drought-resistant adaptations. The fruits of this species are used by the settlers in Australia for jam and pickles and ade is made from the juice. The Australian desert kumquat is the hardiest evergreen citrus fruit known, besides being the only one showing pronounced drought-resisting adaptations; it bears in the wild state edible fruits with a pleasant acid juice and a mild-flavored peel. These characteristics make this plant very promising for use in breeding new types of hardy drought-resistant citrus fruits." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

37713. ASPARAGUS TENUIFOLIUS Lam. Convallariaceæ. **Asparagus.**

From Chene, Geneva, Switzerland. Presented by Mr. Henry Correvon. Received April 6, 1914.

See S. P. I. No. 33147 for previous introduction.

"An herbaceous perennial from southern Europe; like *A. officinalis*, with very slender, numerous cladodes and large, bright red berries." (*J. B. Norton. In Bailey, Standard Cyclopedia of Horticulture.*)

37714 to 37717. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

From Dardanelles, Turkey. Presented by Mr. F. R. J. Calvert, Thymbra Farm. Received April 4, 1914.

"The season for planting these beans is from the beginning of April to the middle of May." (*Calvert.*)

"It is a viscose, pubescent, much-branched, annual herb, generally not exceeding 60 cms. in height. The stem is more or less woody and ribbed, and the leaves are compound, pinnate, and stalked, with a varying number of leaflets, not generally exceeding 16. The flowers are papilionaceous, white or purplish in color, solitary, and with geniculate stalks. The fruit is an oblong, turgid, 2-seeded pod 2 to 2.5 cms. long and about half as broad, and the seed is generally somewhat symmetrically wrinkled. No varieties are distinguished by growers, but seed merchants distinguish two forms, viz. the *Nitaya* and the *Dakar*, these two merely constituting a single variety, superior samples being reckoned as *Nitaya* and those inferior in quality as *Dakar*. When the crop is to be eaten fresh, the harvesting is done about four months after planting, while the seed is yet tender and before the seed coat begins to harden and become tough. Grown for grain, the crop is harvested about five and one-half or six months after sowing." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

The four numbers were received separately, but without any notes as to their differences. In appearance there are no evident differences.

37718. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From Wakamatsu, Iwashire, Japan. Presented by Rev. Christopher Noss, M. D. Cuttings received April 9, 1914.

"*Gosho.*"

37719 to 37721.

From Kashgar, Chinese Turkestan. Presented by Mr. George Macartney, British consul general. Received April 4, 1914.

37719 and 37720. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

37719. From Kashgar. **37720.** From Tashmalik.

37721. CANNABIS SATIVA L. Moraceæ. **Hemp.**

"Kashgar hempseed."

The hempseed was requested as the variety from which hashish or bhang is made. See Watt, Commercial Products of India, for a full account of the preparation and use of this narcotic.

37722. CANAVALI sp. Fabaceæ. **Babricou bean.**

From Bridgetown, Barbados, British West Indies. Presented by Mr. John R. Bovell, Department of Agriculture. Received March 15, 1914.

37723. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Algeria, Algiers. Presented by Dr. L. Trabut, Government botanist. Received April 9, 1914.

"Sorghum gathered at the mouth of Oued Zhour. Gathered from the fields where I observed the *Mezera* or sorghum hybrid of *Sorghum halepense* (*Sorghum annuum*, Trabut's Flora of Algeria). It is probable that you will obtain this form from the seeds. I would have gathered seed of *Mezera*, but these seeds drop when they are ripe like *Sorghum halepense*." (*Trabut.*)

When grown this proved to be the ordinary sorghum, with no trace of the expected hybrid, and it has been discarded as a variety of little or no value.

37724. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**
(*Citrus decumana* Murr.)

From Siam. Presented by Mr. Harry Boyle, assistant horticulturist, Bureau of Agriculture, Philippine Islands. Received December, 1913.

"On September 13 the writer proceeded to the Nakon Chaisri district, where the finest pummelo orchards are located. The largest of these was owned by a Chinese planter and contained about 20 hectares, three-fourths of which was planted with pummelos of the 'seed' variety, while some 25 per cent of the area contained 'seedless' trees. The orchard is divided into plats some 7 meters wide by 60 to 90 meters long, separated by trenches some 3 to 4 meters wide by 2½ meters deep. The pummelo trees are planted in single rows on these plats. All trees are propagated by marcottage, or the 'don' method. The writer was able to demonstrate the modern methods of buddage, and through the assistance of Koon Pisit explained each step so that, were it not for the deeply inoculated custom in vogue there, the planter would now be able to propagate his trees much more rapidly and economically. The soil of this orchard contains about 60 per cent clay.

"The first fruits examined in the 'seedless' section proved to be full of seeds. Upon inquiry as to the reason for this it was stated that the seedlessness was due to the salt deposited from the brackish water which backs up into the river during the dry season; the planter also said that a cocoanut shell of salt was placed in the hole at the time of transplanting the tree, and that another shellful was given the tree each year." (*H. H. Boyle, in Philippine Agricultural Review, February, 1914.*)

37725. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ. **Guar.**
(*Cyamopsis psoraleoides* DC.)

From Bombay, India. Procured from Messrs. Ralli Bros., through the American consul at Bombay. Received April 7, 1914.

"A robust annual pulse cultivated in many parts of India from the Himalayas to the Western Peninsula and never found truly wild in any part of India. Mollison mentions three forms met with in Kaira and Baroda territory, viz, (1) *pardeshi*, sown sparsely among kharif (autumn) cereals; (2) *sotia guvar*, growing 8 to 10 feet high and sown extensively in Gujarat. It is raised as a shade plant to ginger, and the leaves are left on the ground as a green manure; in the garden lands of Surat it is grown with cucumbers, being planted in May and irrigated until the rains. The pods are used as a vegetable and served like French beans; (3) *deshi*, the common form with violet seeds, sown as an ordinary dry crop and extensively used as cattle fodder. Duthie and Fuller mention a form known as *deoband kawára*, which is often culti-

37725—Continued.

vated in the United Provinces as a hedge or shade plant. They observe also that when the plant is cultivated as a vegetable it is grown on highly manured land near villages, but when raised for cattle fodder is cultivated on light, sandy soils. It is sown at the commencement of the rains and cut in October. The average yield of dry pulse is about 10 maunds to the acre. *Guar* is specially suitable as a green manure or green fodder crop, owing to the amount of nitrogen it contains and its comparative freedom (when young) from fiber. Church gives the nutrient ratio of the dry beans as 1:1.7, and the nutrient value 79. In certain districts, such as Meerut, where this plant is regularly and largely grown as cattle food, the breed of animals met with is remarkably fine—a high testimony to the care taken of them." (*Watt, Commercial Products of India.*)

37726 to 37728.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received March 31, 1914.

37726. MIMUSOPS ELENGI L. Sapotaceæ. **Munamal.**

See S. P. I. Nos. 5029 and 30957 for previous introductions.

"A large, evergreen tree, with fleshy leaves, glossy, oval, with nervation slightly emphasized; calyx of six sepals in two series; corolla rotate, with linear appendages; stamens six; 6-celled superior ovary; berry with a single seed by abortion. The wood is good for cabinet-making, joinery, and turning. The fruit, which is shaped like an olive, is eaten, but its flavor is not very agreeable. The odorous flowers, which possess astringent and tonic properties, serve for the preparation of a perfume; the red, woody, fibrous bark is astringent and is used as a febrifuge and a tonic; a decoction is used as a gargle for salivation. The fruits and seeds furnish an oil for burning. The root is astringent." (*Lanessan, Les Plantes Utiles des Colonies Françaises.*)

37727. STERCULIA sp. Sterculiaceæ.

37728. BYRSONIMA CRASSIFOLIA (L.) H. B. K. Malpighiaceæ. **Nance.**

"A shrub or small tree, flattened and forming in certain parts of the torrid and temperate regions, but especially in the torrid regions along the Pacific, characteristic groups called *nancitales* (from its common name *nance*). The leaves are thick, oval, entire, and smooth. The yellow flowers form short spikes; the fruits are small yellow berries and give off a peculiar odor, rather unpleasant, which is the reason, according to Gagini, that the Spanish call the tree *merdiera*. The fruits are used to make a sort of beverage." (*Pittier, Les Plantas Usuales de Costa Rica.*)

37729. FICUS SYCOMORUS L. Moraceæ. **Sycamore fig.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, at the request of Prof. S. C. Mason, of the Bureau of Plant Industry. Received April 11, 1914.

"Sycamore fig."

"This is the sycamore tree of Scripture. It is a very large tree, growing abundantly in Egypt, Syria, and the East; it produces red figs about the size of an egg, but almost insipid; the Egyptians eat them with great relish; for drying they are of no value, being then tasteless, unpleasant, and full of seeds.

37729—Continued.

The fig of this species is an article of great consumption in those countries; wine and vinegar are made from the fermented fruits; the wood has been employed from great antiquity in making mummy cases." (*Hogg, Vegetable Kingdom.*)

Cuttings.

37730. CLITORIA LAURIFOLIA Poir. Fabaceæ.
(*Clitoria cajanifolia* Benth.)

From Buitenzorg, Java. Presented by the Experimental Garden of the Department of Agriculture. Received April 11, 1914.

A pink-flowered shrub growing to a height of 4 or 5 feet and propagated by cuttings. Native of Malay Archipelago and introduced throughout the Tropics.

37731 and 37732. ORYZA SATIVA L. Poaceæ. **Rice.**

From Sophia, Bulgaria. Presented by Mr. Alaricus Delmard, Palais de Sophia. Received April 11, 1914.

"Red and white varieties. The red is for rich soils and the white for poor soils. The results also depend on the quantity and quality of the water of irrigation; for example, near Philippopolis some very poor land produces excellent rice, for the reason that the river which irrigates that land comes from the beech forests and sheep pastures, and the water is rich in decayed vegetable and animal matter, the sheep grazing on the mountain moors, where the swampy ground is full of little streams supplying the river. The red rice is the one that gives a far greater yield. I can not obtain the true name of these two varieties, but they are the only two cultivated here especially for Turkish markets. Cleaned specimens are sent to show just the amount of cleaning given to produce the just medium between color when cooked and retaining the best flavor." (*Delmard.*)

37731. Red. 37732. White.

37733 and 37734. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Kharkof, Russia. Presented by Mr. J. V. Emelianoff, acting director, Agricultural Experiment Station. Received April 9, 1914.

37733. "*Black Grushevsk* has been originated in Ekaterinoslav Province (Grushevsky Farm of the Grand Duke Nicholas)." (*Emelianoff.*)

"On the whole, about 20 varieties were cultivated during the experimental period, the best results, from the seed point of view, being obtained with the Black Dwarf Grushevsk sorghum, which in 1910 produced 3,602 pounds per acre, and in 1911, 2,803 pounds per acre. This kind of sorghum is distinguished by its maturing sufficiently early even in very cold summers. The presence of side branches increases the yield in the case of dry seasons, but in very wet years they have a contrary effect." (*Bulletin Agricultural Intelligence and Plant Diseases, vol. 3, No. 6, p. 1307–1308, 1912.*)

37734. "*Early Iantar.* This variety was received from your country and this name is nothing else but a translation into Russian of your name 'early cane.'" (*Emelianoff.*)

"In dry seasons or on drier plots the early varieties, such as *Early Iantar*, came to the fore. In order to insure abundant forage crops

37733 and 37734—Continued.

throughout the summer two varieties of sorghum should be sown, a very early kind, *Iantar*, which can be first cut at the beginning of July, and a rather late kind which yields well, such as *Orange Kansas*, which can be cut for the first time at the end of July." (*Bulletin Agricultural Intelligence and Plant Diseases, vol. 3, No. 6, p. 1308, 1912.*)

37735. PELARGONIUM RADULA (Cav.) L'Heritier. Geraniaceæ. **Rose geranium.**

From Algeria. Presented by A. Mermier Boyer, Chabet el Ameur. Received April 15, 1914.

"The rose geranium, a plant with an exquisite odor, grown and distilled in France, Spain, Algiers, and the island of Reunion, deserves some consideration with regard to cultivation, inasmuch as the oil distilled from the plant is of such a nature as to make it almost indispensable in the perfumery industry. Unlike that of lavender, the odor of the rose geranium resides in the leaves, the flowers being almost odorless. Experiments in a preliminary way are now being carried on to determine the quality of the oil capable of being distilled from this plant. As in the case of the rose and lavender, the most suitable location can be learned only by a system of tests in localities with different climatic and soil conditions." (*Rabak, Frank, The Production of Volatile Oils and Perfumery Plants in the United States, U. S. Dept. of Agr., Bur. of Plant Ind. Bull. 195, p. 41–42, 1910.*)

It is for the experiments above mentioned that these cuttings were introduced.

37736. PELARGONIUM ODORATISSIMUM (L.) Solander. Geraniaceæ. **Rose geranium.**

From Erfurt, Germany. Procured from Haage & Schmidt. Plants received April 14, 1914.

37737 to 37740. ORYZA SATIVA L. Poaceæ. **Rice.**

37737 and 37738.

From Batum, Russia. Presented by Mr. Leslie A. Davis, American consul. Received March 30, 1914. Quoted notes by Mr. Davis.

37737. "Swamp rice. This is a better variety than the mountain rice, and was formerly cultivated here to some extent, but its culture is now prohibited in the Province of Batum as one of the measures being taken to eradicate malaria from this district. I understand that this variety is now cultivated on the other side of the Turkish frontier and in the Lenkoran district on the Caspian Sea."

37738. "Mountain rice. This variety is inferior to the swamp rice, but it is the only variety now cultivated here."

37739 and 37740.

From Marseille, France. Presented by Mr. Alphonse Gaulin, American consul general. Received March 26, 1914. Quoted notes by Mr. Gaulin.

"Rice is cultivated in France only in the departments of Bouches du Rhone, Gard, and Aude. The total area devoted to this crop, which was about 3,000 acres 10 years ago, has been steadily decreasing in recent

37737 to 37740—Continued. (Quoted notes by Mr. A. Gaulin.)

years, and is now less than 1,400 acres, distributed as follows: Bouches du Rhone, 1,025 acres; Gard, about 300 acres; Aude, 25 acres. In the Bouches du Rhone the industry is limited to the Camargue region, a vast marshy plain of alluvial formation comprising the delta of the Rhone and consisting mainly of rough pasture lands. The only commercial varieties of rice grown in the country are the *Ranghino* and the *Bertone*, which were imported from Italy. The crops for 1912 and 1913 were estimated at 1,260 and 940 metric tons, respectively, of 'risone' or undecorticated grain. According to M. E. de Laroque, Director of the Agricultural Service of the Bouches du Rhone Department, the yield of 'risone' in the Camargue during the last two years was as follows: 1912, 924 metric tons; 1913, 747 metric tons. M. de Laroque states that the cultural methods employed are rather primitive, and unquestionably inferior to the methods in vogue in Italy, and particularly in Spain. These methods are described in a pamphlet entitled 'La Culture du Riz en Italie et en Camargue,' by M. de Laroque. The annual imports of rice at Marseille average over 60,000 metric tons, of which the greater part is taken up by local mills. These imports come chiefly from Indo China, British India, Japan, Java, and Egypt. Rice exports from Marseille average about 2,000 metric tons, consisting mainly of whole rice, flour and semolina, and screenings, the French African colonies and possessions being the principal countries of destination. According to present indications this trade can be at best only of occasional interest to American shippers, so far as this district is concerned. A list of the principal Marseille importers and rice millers may be had from the Bureau of Foreign and Domestic Commerce at Washington."

37739. "The *Ranghino* represented about four-fifths of the crop in 1912 and 1913. The weight of the straw is about double that of the grain. The price averaged 22 francs ($4.246) per 100 kilos (220 pounds) in 1912, and ranged from 18 to 21 francs ($3.47 to $4.05) in 1913. In this district rice is sown at the end of April or the beginning of May. This variety is harvested in September and October."

37740. "*Bertone* is sown at the end of April or the beginning of May and harvested in August or September."

37741 and 37742.

From Brussels, Belgium. Presented by Mr. H. Meyer, acting director, Ministry of the Colonies. Received April 6, 1914.

37741. CROTON ANGOLENSIS Muell. Arg. Euphorbiaceæ.

"A euphorbiaceous plant from the Belgian Kongo. The native name is *Saku*, so called by the Nasku, meaning 'lumbago.' A large forest tree. Its aromatic and spicy bark is macerated in palm wine and then used in rubbing for pains. Its wood is of good quality and is used for building and for timber." (*Meyer.*)

37742. PANDANUS BUTAYEI Wildem. Pandanaceæ.

"One of the *Pandanaceæ* from the Belgian Kongo. The native name in Kanga is *Kenge*, meaning 'to tie, to bind, to twist,' alluding to the different uses of the leaves. Beautiful ornamental plant growing along rivers. The leaves serve for making solid and flexible mats, which bear the name *Mfumbu* and more rarely that of *Matea*." (*Meyer.*)

37743. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

From Johannesburg, Transvaal, South Africa. Presented by Mr. J. Burtt Davy, Transvaal Maize Breeding Station, Burttholm, Vereeniging, South Africa. Received April 11, 1914.

"*Dinawa* (Sesutu name) grown by the Transvaal Basuto among the maize, for food." (*Davy.*)

37744. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From the oasis of Dakhleh, Egypt. Presented by Sheik Abu Bakr, of Rashida village, to Prof. S. C. Mason, of the Bureau of Plant Industry, at the time of his visit there. Received April 12, 1914.

"Dakhleh apricot. Seedling apricots growing in the irrigated gardens of the oasis of Dakhleh, western Egypt. The fruits vary greatly in size and quality, but some are of decided excellence. Quantities of them are dried with the pits in them and used stewed as a dessert during the winter months. These fruits are believed to have been grown in the oasis since the Roman occupation, nearly 2,000 years ago, and are interesting to American plant breeders on account of their resistance to desert conditions of heat. The mean annual temperature of the oasis of Dakhleh is above 75° F., some monthly means being close to 90° F." (*Mason.*)

37745. COCOS ROMANZOFFIANA Cham. Phœnicaceæ. **Palm.**

From Rio de Janeiro, Brazil. Presented by Dr. John C. Willis, botanic garden. Received April 13, 1914.

See S. P. I. No. 34757 for previous introduction.

"Stems 30 to 40 feet high, somewhat fusiform above: leaves about half as long as the caudex, the withered ones deflexed, pendent, the upper ones spreading, often arching; segments conduplicate at the base, ensiform; spadix about 6 feet long, at first inclosed in a stout, pendulous spathe which appears among the lowest leaves. In southern Brazil, near the sea, according to recent characterizations, it comprises a wide variety of forms. Probably the *Cocos flexuosa* planted in this country is not *Cocos flexuosa* of Martius, but of Hort., a hardy form of *romanzoffiana*, which, according to the late Barbosa-Rodrigues, is a polymorphic species including, besides this *flexuosa* type, all our garden forms known as *C. plumosa* Hook., *C. coronata* Hort. (not Mart.), *C. botryophora* Hort., *C. datil* Griseb. and Drude, and *C. australis* Mart." (*N. Taylor. In Bailey, Standard Cyclopedia of Horticulture.*)

37746 and 37747. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Barbados, British West Indies. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Cuttings of the following; quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37746. "(No. 73.) Cochineal cactus, as it is called by the negroes. Found growing near a small hut between Bridgetown and Holetown, about 2 miles back from the coast. The plant was treelike in form, about 12 feet in height, and covered with small fruits of a peculiar shade of cochineal red. Pads almost spineless."

37747. "(No. 74.) A low-growing, very spiny Opuntia, called by the negroes *flatiron prickles*, found along the roadside between Bridgetown

37746 and 37747—Con. (Quoted note by Mr. Dorsett and others.)

and Holetown, about 2 miles from the coast. It had been recently planted in this location for a permanent fence between the road and a farmyard. The plants were young and probably did not show their habit of growth very well. Pads covered with very abundant, long, light-yellow spines."

37748 to 37798.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Scions (except as noted) of the following; quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

37748 to 37793. CITRUS spp. Rutaceæ.

37748 to 37751. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

From the grove of Dr. Fortunato da Silva, at Cabulla, Bahia.

37748. "Select tree No. 1. A tree about 12 years old, 16 feet in height, 16 feet in spread, with a trunk 20 inches in circumference near the ground. It is headed 2 feet above the ground and in habit of growth is spreading and drooping. The foliage is very dense, dark green in color; no spines. The June crop is 241 fruits and the December crop 65 fruits. One fruit has an abnormal shape, namely, a sunken section. A typical fruit weighs 400 grams, is 11¼ inches in circumference, 3¾ inches in diameter. The skin is one-eighth of an inch thick, the core being one-half of an inch in diameter. In form the fruit is spherical, flattened at the blossom end; button flush with surface, blossom flush with surface. When ripe the skin is yellowish green, flesh rich golden, surface smooth. Rag tender, juice very abundant, one fruit containing 150 c. c. Flavor sweet, quality good. Seeds, none. Navel three-eighths of an inch in diameter, opening three-sixteenths of an inch in diameter. This tree and select trees Nos. 2 and 3 in the same orchard are growing in the vicinity of a stable and probably receive more than the ordinary amount of manure. They were selected on the basis of large production of a fine quality of fruit. The trees are of very thrifty appearance, with an abundance of dark-green, healthy foliage. Few scale or other insect pests, fungus diseases, or plant parasites were found on these trees, indicating an apparent resistance to these enemies of the orange tree in this section, where no treatment for scale or plant parasites is ordinarily given."

37749. "Select tree No. 2. A tree 15 feet in height, 16 feet in spread, of erect habit of growth. It is about 12 years old, with a trunk 17⅜ inches in circumference near the ground. It is headed 28 inches above the ground and the foliage is dense, deep green in color; no spines. The June crop is 113 fruits and the December crop 107. There are no apparent variations among the fruits, a typical one of which weighs 440 grams, is 12¼ inches in circumference, and in diameter is 3 1/16 inches. The skin is three-sixteenths of an inch in thickness, and the core is nine-sixteenths of an inch in diameter. In form the

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

fruit is rather elongated, the button flush with the surface, as well as the blossom. When ripe, the skin is light green in color and the flesh light golden yellow. The surface is smooth. Rag tender, juice fairly abundant, one specimen containing 150 c. c. The flavor is sweet, rather insipid. Quality good in comparison with other navel oranges grown in this region. Seeds, none. Navel diameter seven-sixteenths of an inch; navel opening three-sixteenths of an inch."

37750. "Select tree No. 3. A 12-year-old tree, 16 feet in height, 18 feet in spread, drooping and spreading in form, with a trunk circumference of 20 inches. The foliage is dense, dark green in color; no spines. No variations appear among the 130 fruits of the June crop and the 55 fruits of the December crop. A typical fruit weighs 480 grams, is 12½ inches in circumference, 4 inches in diameter, with a skin three-sixteenths of an inch in thickness. The core diameter is half an inch. Button and blossom flush with skin. When ripe, the skin is yellowish green, the flesh being deep golden yellow. The surface is smooth in texture. Rag tender, flesh very juicy, one specimen containing 170 c. c. Flavor is subacid; quality good. Navel diameter is five-sixteenths of an inch, navel opening being three-sixteenths of an inch. There are on this tree many blossoms just opening, fruits just set, and small fruits, as well as those mentioned in the June and December crops, indicating a tendency to bear throughout the year."

37751. "Select tree No. 4. A 25-year-old tree, 20 feet in height, 28 feet in spread, erect in habit; head almost 4 feet above the ground, with a trunk 32 inches in circumference. The foliage is sparse, deep green in color; spines long and sharp. There are 270 fruits in the June crop and 12 in the December crop. Selected because of the erect habit of the tree and on account of the fact that it is reported that the fruits frequently contain seeds."

37752. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

From the grove of Col. Frederico da Costa, Matatu, Bahia.

"Tree 2–8–2. A tree about 8 years old, 14 feet in height, 15 feet in spread, erect in habit, headed 11 inches above the ground, the trunk being 20½ inches in circumference. Foliage dense; very dark green in color; no spines. In the June crop there are 156 fruits; in December, 33 fruits. The principal variations appear in flattened fruits and large, protruding navels, although the navel is normally very small."

37753 to 37759.

From the grove of Dr. Fortunato da Silva, Cabulla, Bahia.

37753. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. **Tangerine.**

"Select tree No. 5. A tree about 25 years old, 12 feet in height, 22 feet in spread; head 2 feet above the ground, spreading in form with a trunk 30 inches in circumference. Foliage dense,

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

very light green in color; no spines. The June crop is 350 fruits and the December crop 54 fruits, among which no variations appear. A typical fruit weighs 180 grams, is 9⅝ inches in circumference, 3 inches in diameter, with a skin one-eighth of an inch thick and a core five-eighths of an inch in diameter. The shape is flattened, the button end raised, the blossom end slightly depressed. When ripe, the skin is yellowish green, the flesh being pinkish in color. The surface is smooth, with oil glands deeply sunken. The rag is tender, the flesh very juicy, a single fruit containing 65 c. c. of juice. The flavor is pronounced and the quality good. There are from 20 to 23 seeds in a fruit."

37754 to 37759. CITRUS SINENSIS (L.) Osbeck.

Navel orange.

37754. "Tree 1–1–3. An old tree, 16 feet in height, 16 feet in spread, head 20 inches above the ground, spreading in form, with a trunk 21¾ inches in circumference. The foliage is open, deep green in color; thorns confined to one branch. There are no apparent variations among the 185 fruits of the June crop and 35 of the December crop. A typical fruit weighs 560 grams and is 13 inches in circumference; diameter 4⅛ inches, with a skin one-eighth of an inch in thickness and a core three-fourths of an inch in diameter. Form of fruit, elongated, flattened at the blossom end. Button and blossom flush with surface. When ripe, the skin is yellowish green in color, the flesh being golden. The surface is smooth. The rag is very coarse and the flesh dry, a single fruit containing only 150 c. c. of juice. The navel is 1 inch in diameter, the opening being three-fourths of an inch wide."

37755. "Tree 1–1–2, renewed tree top about 2 years old. A tree probably 25 years old, 16 feet in height, 20 feet in spread. Head 1½ feet above the ground, spreading in form, the trunk being 23⅜ inches in circumference. The foliage is open, deep green in color; no spines. There are about 10 fruits in the June crop and 20 in the December crop, among which no variations are apparent. A single typical fruit weighs 480 grams, is 12⅝ inches in circumference and 4 inches in diameter. The skin is one-eighth of an inch thick; a core rather open, seven-eighths of an inch in diameter. The shape is spherical, somewhat flattened at both ends, the button slightly sunken, blossom flush with the surface. When ripe the color is yellowish, rather better than the average, the flesh golden yellow. The rag is coarse, and a single fruit contains 150 c. c. of juice. The flavor is sweet, the quality fair. In diameter the navel is five-eighths of an inch and the opening is three-sixteenths of an inch."

37756. "Tree 1–4–6. Tree 25 years old, 14 feet in height, 14 feet in spread, erect in habit, head 1½ feet above the ground, with a trunk 23 inches in circumference. The

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

foliage is very open, deep green in color; no spines. The June crop is 191 fruits and the December crop 15 fruits, among which there are no apparent variations."

37757. "Tree 1–5–2. A tree about 25 years old, 13 feet in height, 13 feet in spread, headed 10 inches above the ground; spreading in form, with a trunk 27 inches in circumference. The foliage is dense, deep green in color; no spines. There are 145 fruits in the June crop and 14 in the December crop. The most noticeable variation among them is the tendency to elliptical form, which is shown by a few fruits."

37758. "Tree 1–6–3. A tree about 25 years old, 18 feet in height, 12½ feet in spread, very erect in form, headed 1 foot above the ground, with a trunk 32 inches in circumference. Foliage open, deep green in color; no thorns. The June crop is 125 fruits; the December, 30 fruits. One orange-colored fruit is evidently off season. There are no other noticeable variations. The navel is small."

37759. "Tree 1–6–7. A tree about 25 years old, 16 feet in height, 16 feet in spread, erect in growth; head 14 inches above the ground, with a trunk 33 inches in circumference. The foliage sparse, deep green in color; no spines. In the June crop there are 355 fruits and in the December crop 11 fruits, among which there are no apparent variations. The navel is uniformly small."

37760 to 37773.

From the grove of Col. Frederico da Costa, Matatu, Bahia.

37760 to 37770. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

37760. "Tree 1–8–6. A tree about 15 years old, 18 feet in height, 20 feet in spread, headed 11 inches above the ground; spreading in habit, with a trunk 23¼ inches in circumference. The foliage is dense, dark green in color; no spines. In the June crop there are 171 fruits and in the December crop 8 fruits, among which no variations are apparent. The navel is very small. This is a very old tree, having the largest trunk of any citrus tree observed in this orchard. Extreme fruitfulness is combined with the tendency to bear fruits all the year round, as there are flowers in all stages of development on this tree. No mottle-leaf was observed, and it seems possible that this tree may be resistant to chlorosis."

37761. "Tree 1–8–1. A tree about 15 years old, 16 feet in height, 18 feet in spread, drooping in habit, headed about 13 inches above the ground, with a trunk 22¾ inches in circumference. The foliage is very dense, deep green in color; no spines. In the June crop there are 110 fruits and in the December crop 16 fruits, among which no variations are visible. The navel is small to medium in size."

37762. "Tree 1–8–5. A tree about 15 years old, 18 feet in height, 20 feet in spread, headed 1½ feet from the ground;

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

spreading in habit, with a trunk 29 inches in circumference. Foliage dense, dark green in color; no spines. There are 145 fruits in the June crop and 50 in the December crop, the most notable variation being an occasional striped fruit. The navels vary in size from small to medium; a fine, healthy tree producing fruits of large size."

37763. "Tree 1–7–6. A tree about 15 years old, 18 feet in height, 20 feet in spread, erect in habit, headed 20 inches above the ground, with a trunk 2 feet in circumference. The foliage is dense, dark green in color; no spines. In the June crop there are 196 fruits and in the December crop 13 fruits. The principal variation is a protruding navel, though the size is normally small to medium. A fine, healthy tree."

37764. "Tree 2–5–1. A tree about 8 years old, 13 feet in height, 16 feet in spread, headed 11½ inches above the ground; spreading in habit, with a trunk 20¾ inches in circumference. The foliage is dense, dark green in color; no spines. There are 85 fruits in the June crop and 250 in the December crop. On one limb there are 8 wrinkled fruits of the Australian type. The navel is normally very small. Remarkable for the large number of fruits produced in the December crop."

37765. "Tree 2–6–1. Tree about 8 years old, 13 feet in height, 15 feet in spread, drooping in habit, headed 1½ feet above the ground. Trunk 18¼ inches in circumference. The foliage is dense, dark green in color; no spines. There are 44 fruits in the June crop and 327 in the December crop, all being very uniform in type. The navel is uniformly small. This tree is remarkable for the large number of fruits in the December crop."

37766. "Tree 2–11–1. A tree about 8 years old, 11 feet in height, 13 feet in spread, headed 16 inches above the ground, spreading in habit, circumference of trunk 16¾ inches. Foliage very dense, dark green; a few small spines. In the June crop there are 50 fruits and in the December crop 59. The principal variations noted are a few large navels and the abnormal shape of the fruit. The navel is normally medium sized. Selected for its apparent tendency to produce fruit throughout the year."

37767. "Tree 2–8–4. A tree about 8 years old, 13 feet in height, 18 feet in spread, headed 10 inches above the ground, spreading in habit, trunk 20½ inches in circumference. Foliage very dense, dark green in color; a few small spines. In the June crop there are 262 fruits and 21 in the December crop, among which there are a few with very large navels, although the navel is normally medium sized. This tree was selected for its large production of June fruits."

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

37768. "Tree 2–9–5. A tree about 8 years old, 15 feet in height, 15 feet in spread, erect and open in habit, headed 16 inches above the ground, with a trunk 21½ inches in circumference. The foliage is dense on the outside of the tree, dark green in color; no spines. In the June crop there are 210 fruits and in the December crop 35. The shape of the fruit varies considerably. There are some large navels, although the navel is normally very small. Selected because of its rather peculiar, upright, open habit of growth and small leaves. It is distinct in type from the typical navel orange tree in Bahia."

37769. "Tree 2–10–2. A tree about 8 years old, 14 feet in height, 16 feet in spread, headed about 15 inches above the ground, spreading in habit, with a trunk 19¼ inches in circumference. Its foliage is very dense, dark green in color; no spines. In the June crop there are 297 fruits and 20 in the December crop, among which there are no apparent variations. The navel is uniformly very small. Selected because of the preponderance of June fruits."

37770. "Tree 2–10–1. A tree about 8 years old, 14 feet in height, 15 feet in spread, of drooping habit, headed 17 inches above the ground, with a trunk 18 inches in circumference. The foliage is very dense, dark green; no spines. There are 98 fruits in the June crop and 97 in the December crop. The fruit variations are very noticeable on this tree, the principal ones being cylindrical and flattened shapes, the fruit wrinkled, very large and protruding navels, and very large navel openings. The navel varies from very small to very large. A typical specimen from this tree weighs 340 grams, is 11⅞ inches in circumference, 3¾ inches in diameter, the skin is one-sixteenth of an inch thick, and the core is one-half inch in diameter. The shape is most commonly flattened, the button flush with the surface, the blossom sunken. The color is yellowish green, with the flesh deep golden yellow. The surface is very smooth. The rag is coarse and the flesh fairly juicy, a typical specimen containing 130 c. c. of juice. The flavor is subacid and the quality good. This variety is unusually thin skinned."

37771. CITRUS NOBILIS DELICIOSA (Tenore) Swingle.

Tangerine.

"Tree 2–6–2. Tree about 11 feet in height, 12 feet in spread, headed 17½ inches above the ground, spreading in habit, the trunk being 18 inches in circumference. The foliage is very dense, light green in color; many large spines. There are no fruits in the June crop, but 565 in the December crop, among which two were found with small navels. Typical fruit weighs about 120 grams, is 8¾ inches in circumference, 2¾ inches in diameter, and skin one-eighth of an inch thick, and the core five-eighths of an inch in diameter. The shape is flattened, button flush with surface, blossom slightly sunken. The surface is yellowish green in color, the flesh pinkish. The rag is tender,

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

and a typical fruit contains 50 c. c. of juice. The flavor is sweet and the quality fair. There are about 19 seeds to the fruit."

37772 and 37773. CITRUS LIMETTA Risso. **Sweet lime.**

37772. "Tree 1–2–5. This fruit, known in Portuguese as *lima doce*, is about the size of a lemon, a typical fruit being 2¼ inches in diameter. The skin is pale green in color externally and slightly less than one-fourth of an inch in thickness. The core is closed and small, the juice sweet and cloying in flavor. This is a fruit that is highly esteemed by the Bahians. Its flavor is similar to that of the lime, but with less acidity. The seeds number 12. The tree is very productive."

37773. "Tree 1–1–7. See previous number [S. P. I. 37772] for description."

37774 to 37777.

From the grove of Col. Demetrio Luiz de Souza, Cruz de Cosme, Bahia.

37774. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

"Tree 1–6–1. A tree about 25 years old, 18 feet in height, 21 feet in spread, headed 1½ feet above the ground, spreading habit, trunk 27 inches in circumference. Foliage dense, dark green in color; no spines. There are 237 fruits in the June crop and 49 in the December crop, no variations among them being apparent. The navel is medium sized. The fruits on this tree were some of the finest we observed during our stay in Bahia."

37775. CITRUS AURANTIUM L. **Bitter orange.**

"Tree 1–1–1. The bitter or Seville orange, known in Portuguese as *laranja da terra*. This is the citrus generally used in Bahia as a stock for the navel orange, as well as for other varieties of citrus fruits. The tree from which these buds were taken is about 15 years old, 14 feet in height, 13 feet in spread, erect in habit, headed 15 inches above the ground, with a trunk 23½ inches in circumference. The foliage is dense, deep green; thorns very large and strong. There are 106 fruits in the June crop and 46 in the December crop, among which no variations were noticed. Typical fruit of *laranja da terra* weighs about 180 grams and is 9½ inches in circumference, 3 inches in diameter, with a skin one fourth of an inch thick and a core three fourths of an inch in diameter. The shape is oblate, with the button and blossom flush with the surface. The skin is dull orange in color and the flesh pale orange. The texture of the surface is rough. The rag is tender, juice abundant, a single fruit containing 60 c. c. The flavor is bitter and rather acid. The quality is poor for eating out of hand, the fruit being used principally for making marmalade. Obtained for trial as a stock plant for citrus fruits in this country and also for marmalade or cooking purposes."

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

37776. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"*Laranja da china.* Tree 1–2–1. This is a seedy, sweet orange, inferior in quality to the navel orange and grown principally as a stock plant for the latter. In parts of the interior of Brazil, however, it is commonly grown for its fruit, the navel orange being little known in many of these regions. It is of fair size, usually pale green in color when ripe, with tough rag, many seeds; juice abundant and of subacid flavor. In Bahia it is not commonly used for stock, *laranja da terra* being used for this purpose, but in the interior, where the latter is little known, it is more largely utilized. This variety ripens in Bahia after the June crop of navels is gone, hence it brings a good price on the market."

37777. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"A seedy orange, said to be identical in character with *laranja selecta* as grown at Bahia, and taken from a tree said by Col. Demetrio Luiz de Souza to have been grown from a bud taken from a navel-orange tree. The tree is 6 years of age, 12 feet in height, 12 feet in spread, head a little less than 2 feet above the ground, spreading in form, with a trunk 15¼ inches in circumference. The foliage is dense, dark green in color; a few very small thorns. There are 31 fruits in the June crop and 39 in the December, no variations being apparent among them. The fruit is about 3 inches in diameter, with skin one-fourth of an inch thick and core about half an inch in diameter. The rag is tender and the juice very abundant. The fruit shows no sign of a navel and contains about eight perfectly developed seeds. This tree is of special interest because of the possibility of its having arisen as a bud sport or as a reversion of the navel orange to the parent *laranja selecta* type."

37778. CITRUS GRANDIS (L.) Osbeck. **Pummelo.**
(*Citrus decumana* Murr.)

From the ranch of Dr. Miguel de Teive e Argollo, Roma, Bahia.

"A very large pummelo with flesh of rich pink color. A good specimen weighs 2,000 grams and is 23½ inches in circumference, with a diameter of 7½ inches. The skin is 1 inch thick and the core 1½ inches in diameter. The form of fruit is oblate, with a smooth, fine skin, light green in color. The rag is coarse, the flesh rather dry, the flavor sweet and agreeable. One fruit contained 102 seeds. This pummelo is not widely known in Brazil. The tree is low and spreading in form, and the fruits are produced in clusters like the grapefruit grown in the United States. It seems to have possibilities as a salad fruit, particularly because of its attractive color as well as its good flavor."

37779 to 37782.

From the grove of Dr. Miguel de Teive e Argollo, Roma, Bahia.

37779. CITRUS BERGAMIA Risso. **Bergamot orange.**

"Tree said by Dr. Argollo to be the Bergamot orange. A typical fruit weighs about 620 grams, is 14⅛ inches in circumference, 4⅝ inches in diameter, with skin five-eighths of an inch thick and core a half inch in diameter. The shape is somewhat

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

pyriform, the fruit being elongated at the base and flattened at the apex. The smooth surface is yellowish in color. The rag is coarse, the flesh not very juicy, one fruit containing about 110 c. c. of juice. The flavor is sweet, with a slight bitter twang. Quality can be considered only fair. The specimen examined contained 7 seeds."

37780. CITRUS GRANDIS (L.) Osbeck. **Pummelo.**
(*Citrus decumana* Murr.)

"A seedless variety, not widely grown in Bahia, and found by us only in this one garden. Averages about 1½ pounds in weight, has a rather thick skin and abundant juice. The flavor is that of typical grapefruits grown in the United States. Its origin is unknown."

37781. CITRUS MEDICA L. **Citron.**

"A fruit about 1,000 grams in weight, 14⅜ inches in circumference, 4¾ inches in diameter, with a skin 1¼ inches thick, and a core 1 inch in diameter. The surface is rough and pale green in color. The flesh contains but little juice and is pale straw color with coarse rag. The flesh is utilized for the manufacture of a preserve."

37782. CITRUS SINENSIS (L.) Osbeck. **Orange.**

"*Laranja selecta.* Cuttings from a tree on Dr. Argollo's place. This orange has been introduced from Rio de Janeiro under S. P. I. No. 37840, which see for description."

37783. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

From the grove of Col. Julio Barretto, Cabulla, Bahia.

"A tree said to be more than 40 years old, 20 feet in height, 21 feet in spread, erect in habit, headed 1 foot 5 inches above the ground, with a trunk 38¾ inches in circumference. The foliage is sparse, dark green; no spines. There are in the June crop 398 fruits and in the December crop 264 fruits. Little variation is noticeable among them, excepting the size of navels, which varies from small to medium. A typical fruit weighs 420 grams, is 11⅞ inches in circumference, 4¾ inches in diameter, with a core three-fourths of an inch in diameter. The shape is elongated, the button and blossom flush with the surface. The color is yellowish green and the flesh golden yellow. The surface is smooth. The rag is tender and the flesh very juicy, one fruit containing 140 c. c. of juice. The flavor is subacid, the quality being very good. The navel is seven-sixteenths of an inch in diameter and the opening one-eighth of an inch. This tree is remarkable for productiveness. The fruit is of especially fine quality. It is budded on *laranja da terra* stock. (See S. P. I. Nos. 37791 and 37792)."

37784 to 37786. CITRUS sp. **Lime orange.**

From the grove of Col. João de Teive e Argollo, Agua Comprida, Bahia.

37784. "These trees are about 20 years of age, 20 feet in height, 20 feet in spread, headed about 4 feet above the ground, and with trunks 25 inches in circumference. Erect and open habit of growth. Foliage sparse, light green in

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

color; few spines; tree productive. A typical fruit weighs 350 grams, is 11 inches in circumference, 3¼ inches in diameter, the skin is one-fourth of an inch thick and core 1½ inches in diameter. The form is oval to nearly spherical; color yellowish green when ripe. The surface is smooth, the flesh golden yellow in color. The rag is tender and the juice is abundant, a single specimen containing 125 c. c. of juice. The flavor is a mixture of that of the orange and lime, sweet and pleasant. The seeds are 2 to 8 in number. Col. Argollo says that this variety comes true from the seed. It is common in the markets of Rio de Janeiro during February and March, and is evidently highly esteemed by the Brazilians because of its pleasant, refreshing flavor. It is used extensively for making an orangeade which the Brazilians esteem more highly than that made from other citrus fruits."

37785 and 37786. See S. P. I. No. 37784 for description.

37787. CITRUS LIMETTA Risso. **Sweet lime.**

From the grove of Dr. Fortunato da Silva, Cabulla, Bahia.

"This fruit, known in Portuguese as *lima doce*, is about the size of a lemon, a typical fruit being 2¼ inches in diameter. The skin is pale green in color, externally, and slightly less than one-fourth of an inch in thickness. The core is closed and small; the juice sweet and cloying in flavor. This is a fruit that is highly esteemed by the Bahians. Its flavor is similar to that of the lime, but with less acidity. The seeds number 12. The tree is very productive."

37788 and 37789.

From the grove of Col. Frederico da Costa, Matatu, Bahia.

37788. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

"A tree about 15 years old, 16 feet in height, 21 feet in spread, headed about 15 inches above ground, spreading in form, with a trunk 31 inches in circumference. The foliage is very dense, dark green; no spines. In the June crop there are 113 fruits, in the December crop 24, no prominent variations being apparent among them. A typical fruit is about 440 grams in weight, 12½ inches in circumference, 4 inches in diameter, the skin is one-eighth of an inch in thickness, and the core is three-fourths of an inch in diameter. The shape is elongated, the button end slightly sunken, the blossom end slightly raised. The surface is light golden in color. The rag is very tender, and the juice is abundant, one fruit containing 150 c. c. of juice. The navel is 1 inch in diameter and the navel opening is one-fourth of an inch wide."

37789. CITRUS LIMETTA Risso. Rutaceæ. **Sweet lime.**

For description of the sweet lime, see S. P. I. No. 37787.

37790. MANGIFERA INDICA L. Anacardiaceæ. **Rose mango.**

From Roma, Bahia. See S. P. I. No. 37846 for description.

37791 and 37792. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Navel orange.**

From the grove of Col. Julio Barretto, Cabulla, Bahia.

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

37791. "A tree believed to be about 40 years old, but with a top much younger than this, perhaps 8 years old, as the tree has been renewed by cutting it back to the old stump. Its height is about 10 feet, its spread 12 feet, its habit drooping, its trunk 29¾ inches in circumference, and it is headed 14 inches above the ground. The foliage is dense, dark green; no thorns. In the June crop there are 139 fruits and in the December crop 35, the principal variations being in the size of the navel, which is from very small to medium."

37792. "A tree said to be more than 40 years old, about 20 feet in height, and 27 feet in spread, erect in habit, headed more than 4 feet above the ground, with a trunk 37½ inches in circumference. The foliage is sparse, dark green; no spines. In the June crop there are 234 fruits and in the December crop 139, among them being many which are flattened or wrinkled. Navels vary from medium to large in size, some of them being very large and protruding. This and S. P. I. No. 37791 are from a grove that is said to be one of the very oldest existing in Bahia. The Bahia navel orange is believed to have originated near it. Many of the trees in this grove are said to be about 40 or more years of age, but have had their tops renewed several times by cutting back to the trunk, a custom common in Bahian orchards. The orchardists generally believe that these renewed tops produce better fruit than the original tree. It appears to us that this may be due to the fact that as the trees grow older and decline in vigor and productiveness, the fruit naturally becomes smaller and poorer. By renewal its size and quality are considerably increased, equal perhaps to the fruits borne by a young tree. This 45-year-old orchard is said to be one of the most productive and profitable in Bahia."

37793. CITRUS sp. Rutaceæ. **Lime orange.**

From the grove of Col. João de Teive e Argollo, Agua Comprida, Bahia. Lime orange, called in Portuguese *laranja lima.* See S. P. I. No. 37784 for description.

37794. NEOGLAZIOVIA VARIEGATA (Arruda) Mez. Bromeliaceæ. **Caroá.** (*Billbergia variegata* Schultz.)

From Joazeiro, Brazil. Presented by Dr. Leo Zehntner, Director of the Horto Florestal, Joazeiro, Bahia.

"This plant is found in the caatingas or dry lands of the interior of Bahia State, particularly around Joazeiro. It grows to a height of 4 or 5 feet, and is conspicuous among the other plants on the caatinga because of its variegated leaves, which are deep green blotched with white. The natives harvest the wild plants, extract the fiber, and make of it ropes, baskets, hammocks, etc. One of the commonest articles made of caroá fiber is a small rope about one-fourth of an inch in diameter and 6 feet in length, which is sold in the Joazeiro markets at 100 reis (about 3 cents) and is used to string up hammocks.

"Statistics concerning the extent of the caroá industry are lacking. The plant should be worthy of a trial in the southwestern United States,

37748 to 37798—Contd. (Quoted notes by Mr. Dorsett and others.)

however, to determine its value and the feasibility of economically extracting the fiber."

Plants.

37795. CITRUS BERGAMIA Risso. Rutaceæ. **Bergamot orange.**

From Roma, Bahia. See S. P. I. No. 37779 for description.

37796. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

From the grove of Senhor João Elias Esteres, Nictheroy, Rio de Janeiro.

"Cuttings of *laranja selecta* from a variety which is a favorite in Rio de Janeiro, its cultivation being much more extensive than that of the Bahia navel orange. It is hard to understand why this should be, when one considers that the navel is seedless while *Selecta* contains numerous seeds. It seems to be the popular opinion, however, that *Selecta* is a better flavored orange than the navel grown in this section. *Selecta* is believed to be the parent of the Bahia navel, and there is good evidence to substantiate this belief. It is an orange of good size, about as large as a good California Washington Navel, but slightly flattened or oblate in form. The flesh is tender and juicy and of a delicious sprightly flavor, rather a contrast in this respect to the Bahia navel, which is usually lacking in acidity."

37797. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

From Maxambomba, Brazil.

"Cuttings of *laranja da pera* from Maxambomba, about 30 kilometers from Rio de Janeiro, on the Central Railway. This variety is called the pear orange, presumably because of its slightly elongated form. It is a smaller fruit than the *Selecta*, being more nearly comparable to the *Mediterranean Sweet*, grown in California. These cuttings are from the grove of José Maria Corres, one of the best in the region around Maxambomba. The trees are very prolific fruiters and ripen their crop about Christmas time, at almost the opposite season of the year from *Selecta*, which ripens from March or April until September. It is one of the chief commercial varieties of the region, and while rather seedy, there is an abundance of juice and little rag. The flavor is very sweet and not so refreshing as *Selecta*."

37798. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

"From the nursery of Eickhoff, Carneiro Leão & Co., Rio de Janeiro. Cuttings of *laranja da pera*. See S. P. I. No. 37797 for a description of this variety."

37799 to 37801.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 2, 1914. Quoted notes by Mr. Meyer.

37799 and 37800. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

From the village of Yatzeko, south of Sianfu, Shensi, China. January 20, 1914.

37799. "(No. 2006a.) A large-fruited variety of Chinese chestnut, which locally is propagated by top grafting. The trees are of low-branching habits and prefer a well-drained, decomposed

37799 to 37801—Continued. (Quoted notes by Mr. F. N. Meyer.)

rock soil, possibly at the foot of mountains. They seem to be quite resistant to the bark disease but may perhaps not be quite hardy north of Washington, D. C. Chinese name *K'uei li tzŭ*, meaning 'superior chestnut.'"

37800. "(No. 2007a.) The ordinary form of local chestnut, having rather small nuts; the trees are low branching and do not grow tall; the leaves persist on the trees till spring. Chinese name *Yin li tzŭ*, meaning 'silver chestnut.' Propagated from seed only. See remarks under Nos. 2005a and 2006a [S. P. I. Nos. 37548 and 37799]."

37801. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"(No. 2008a. Mountains near Nantotchu, south of Sianfu, Shensi, China. January 21, 1914.) The wild form of cultivated Japanese and Chinese persimmon, collected at an altitude of over 2,000 feet above sea level. Chinese name *Yeh shih tzŭ*."

See No. 1096 [S. P. I. No. 37540] for additional information.

37802. RHEEDIA BRASILIENSIS (Mart.) Planch. and Triana. Clusiaceæ. **Bakopary.**

From Rio de Janeiro, Brazil. Presented by Dr. J. C. Willis, director of the Jardim Botanico. Received April 13, 1914.

"A beautiful pyramidal tree of the family Guttiferæ, known in the State of Rio de Janeiro, Brazil, where it is indigenous, under the name of *bakopary*. As the name indicates, the fruit greatly resembles the *bakury* (*Platonia insignis—Aristoclesia esculenta*); it is somewhat smaller in size than the latter, and while not considered so delicious, is highly esteemed by the natives, particularly when prepared in the form of a *doce* or jam, when, as one authority says, it is 'a nectar.' In general form the fruit is ovate, rather sharp at the apex. In length it varies from 1¼ to 1½ inches, in width from 1 to 1¼ inches. The stem is 1½ to 2 inches in length, rather stout. When fully ripe the color is light orange yellow tinged with green. The tough, pliable skin, about one-eighth of an inch thick, surrounds the soft, translucent, snowy white pulp in which the two oblong elliptical seeds are embedded. In flavor the pulp is subacid, sprightly, strikingly similar to that of the mangosteen, though perhaps not quite so delicate.

"Deserves a trial in the warmest sections of the United States, not only for its own merits as a fruit but in connection with the mangosteen experiments. As a stock for the mangosteen it might prove of value." (*Wilson Popenoe.*)

For an illustration of the leaves and fruit of the bakopary, see Plate III.

Plants.

37803 to 37805. CITRUS spp. Rutaceæ.

Presented by Mr. James Birch Rorer, mycologist, Board of Agriculture, Port of Spain, Trinidad, through Mrs. S. T. Rorer. Received April 21, 1914.

37803. CITRUS AURANTIFOLIA (Christm.) Swingle. **Lime.**

From the island of Tobago, British West Indies.

Cuttings.

37803 to 37805—Continued.

37804. CITRUS GRANDIS (L.) Osbeck. **Alamoen.**
(*Citrus decumana* Murr.)

From Surinam.

"*Alamoen.* During the past three years I have made several trips to Surinam and have found there a fruit which they call *alamoen*, and which seems to me to be far superior to the grapefruit in flavor. So far as I can learn it is a native of that part of the world; trees are growing everywhere there and thousands of fruit rotting every year. Trees come true to seed, I have been told by various planters in Surinam." (*Rorer.*)

37805. CITRUS LIMETTA Risso. **Sweet lime.**

From the island of Tobago, British West Indies.

37806. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ.

(*Hibiscus esculentus* L.) **Okra.**

From Rashida, Dakhleh Oasis, Western Egypt. Presented by Sheik Abu Bakr, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received April 22, 1914.

37807. BRASSICA OLERACEA CAULO-RAPA × VIRIDIS. Brassicaceæ.

Marrow kale.

From Wordsley, Stourbridge, England. Procured from E. Webb & Sons. Received April 20, 1914.

"This is a cross between thousand-headed kale and kohl-rabi. Produces a thickened stem of a marrowy nature, and grows about 5 feet high. During the autumn the leaves should be cut and given to cattle. Later on, before severe frost sets in, gather the stems and store, safe from frost, for food supplies through the winter. The culture is similar to thousand-headed kale." (*Webb & Sons.*)

37808. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ.

(*Atalantia glauca* Benth.) **Desert kumquat.**

From Sydney, New South Wales, Australia. Presented by Mr. J. H. Maiden, director, Botanic Garden. Received April 22, 1914.

"Fresh fruits of the native lime from Collarenebri, in the northwest of this State." (*Maiden.*)

37809 to 37812.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Quoted notes by Mr. Meyer.

37809. PONCIRUS TRIFOLIATA (L.) Raf. Rutaceæ. **Trifoliate orange.**
(*Citrus trifoliata* L.)

From Sianfu, Shensi, China. Received April 2, 1914.

"(No. 2009a. January 26, 1914.) The well-known hardy trifoliate orange, quite common on the Sianfu plain on Chinese burial grounds. Sparingly used as a hedge plant, especially around old temple gardens. The plant is much used by Chinese gardeners in pot culture upon which to graft various citrus fruits and keep them dwarfed. Locally the fruits

37809 to 37812—Continued. (Quoted notes by Mr. F. N. Meyer.)

are used as fuel after having been roughly crushed and partly dried. The wood occasionally is employed in carpentering work and for tool handles and carrying poles, but it is not much thought of. The plant seems to be able to stand a great amount of drought and some alkali also, and it might prove to be of great value as a hedge plant for sections of the semiarid United States where the winters are not too severe. The fruits of this orange are often quite large and elongated near the peduncle. May possibly be a different and perhaps hardier variety than the ordinary Japanese form. Chinese name *Ch'ou ch'êng tzŭ*."

37810. ULMUS PARVIFOLIA Jacq. Ulmaceæ. **Elm.**

From the village of Nantotchu, south of Sianfu, Shensi. Received April 14, 1914.

"(No. 2010a. January 21, 1914.) A small-leaved species of elm, growing in favorable localities into a tall tree with a heavy trunk; on dry, exposed loess cliffs, however, it remains in the nature of a tall shrub. The bark is scaly and thrown off in small patches, making the trunk and limbs quite smooth; the trees flower in late summer and the ripe fruits, together with the dead, brown foliage, are retained in sheltered spots until springtime. This elm is very drought resistant and stands a fair amount of alkali. It is much planted by the Chinese for its lumber, which is durable and tenacious and in special demand by cart builders. Of value for the mild-wintered semiarid sections of the United States as a useful lumber tree and as an ornamental tree for parks and along roads. Chinese name *Kuang kuang yü shu*, meaning 'lustrous' or 'shiny elm tree.'"

37811 and 37812. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

37811. From Fuping, Shensi. Received April 14, 1914.

"(No. 2011a. February 3, 1914.) An improved variety of the ordinary *lotus* persimmon of North China, used extensively by the Chinese as a stock for their cultivated *kaki* varieties. To obtain the best results, the practice of patch budding in late spring should be followed, and the Chinese as a rule set two or three buds on the same stock, so as to make sure. This *lotus* persimmon occurs naturally in dry loess ravines, along steep edges of loess tablelands, and on pebbly and rocky inclines. It seems to be able to withstand a truly amazing amount of drought and also a fair percentage of alkali, but the trees do not thrive on low places or on lands which are not properly drained. The use of this *lotus* persimmon as a stock in America may possibly make persimmon culture successful, even in regions with a summer rainfall of 10 to 12 inches only. Local name *Juan tsao tzŭ*, meaning 'soft jujube.'"

37812. From Ishih, Shansi. Received April 4, 1914.

"(No. 2012a. February 12, 1914.) The ordinary form of the wild *lotus* persimmon, the fruits of which are a sweetmeat for children. For further information see preceding number. Local name *Juan tsao tzŭ*."

37813 to 37818.

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received April 11, 1914. Quoted notes by Mr. Goding, except as otherwise indicated.

37813 to 37818—Contd. (Quoted notes by Mr. F. W. Goding.)

37813. ACHRADELPHA MAMMOSA (L.) Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn. f.)

"*Mamey colorado.* A fruit about the size of a teacup, resembling a potato in general appearance, the skin being rough, dark greenish brown, mottled with sordid yellow. The edible portion is red, soft, sweet, with a peculiar but pleasant flavor, in the center of which is a shuttle-shaped seed about 2 inches long, of a chestnut-brown color and always apparently split along one side; within the hard, thin, shining shell is a white kernel. These fruits are produced by large trees common throughout the warm coastal region of Ecuador, whence they are brought, in quantities, by the natives to the Guayaquil markets. In Mexico are to be found fruits bearing similar names, but widely differing otherwise."

37814. MAMMEA AMERICANA L. Clusiaceæ. **Mammee.**

"*Mamey cartajina,* also called *mata serrano,* in general appearance resembles the *colorado.* The edible part, however, is rather hard like that of the squash, in which are to be found two large, rough nuts flattened on one side, but otherwise rounded, the flat surfaces lying together, inside being the kernel. The hard exterior of the nut is grated by the natives and used to kill fleas; when applied to infested dogs the parasites leave the animal at once. This fruit is used locally only for making an excellent jam. These fruits are produced by large trees common throughout the warm coastal region of Ecuador, whence they are brought, in quantities, by the natives to the Guayaquil markets. In Mexico are to be found fruits bearing similar names, but widely differing otherwise."

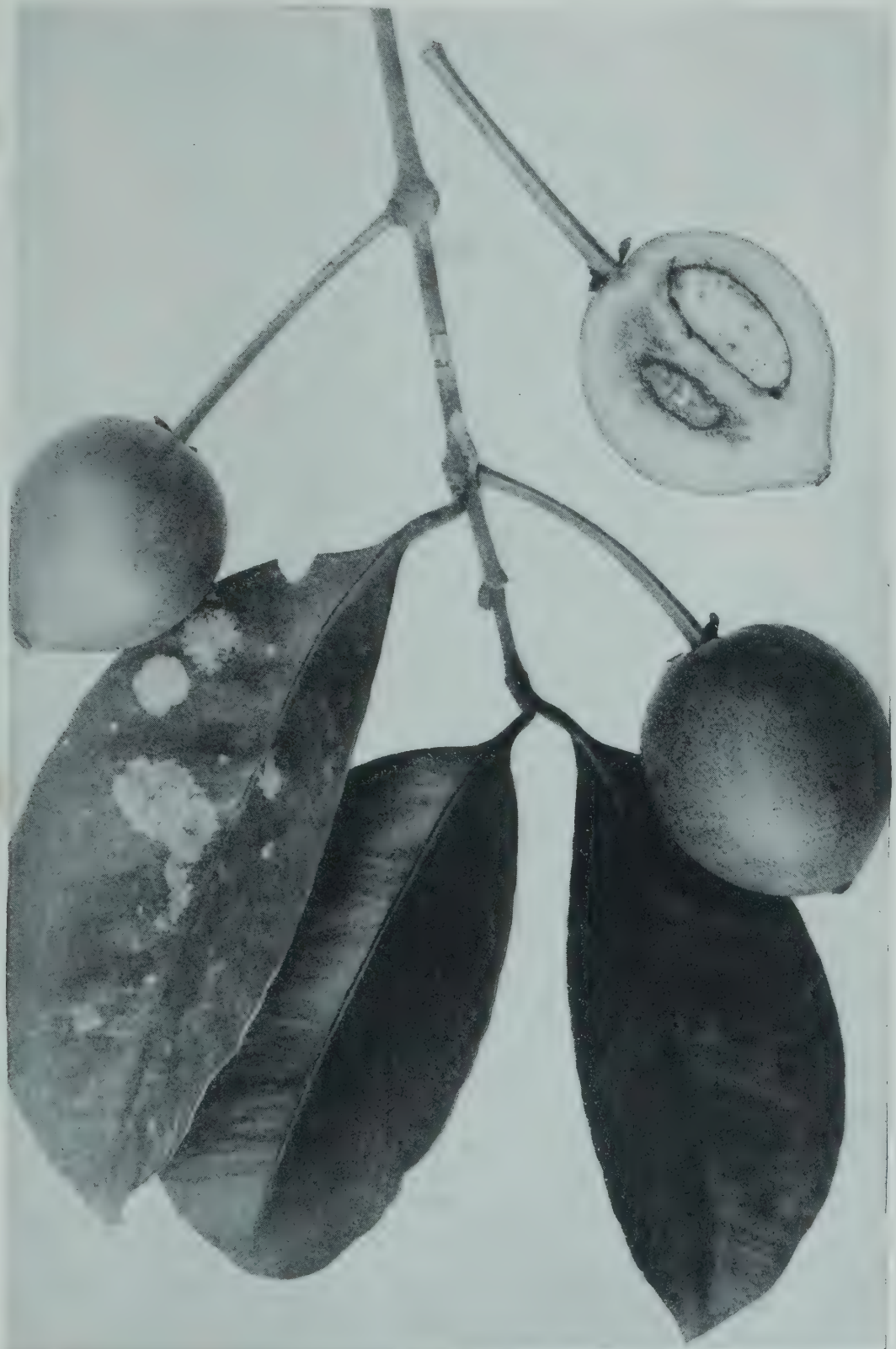
37815. (Undetermined.)

"*Zapote.* This fruit outwardly resembles a round summer squash, the smooth skin being pale greenish, hard, and thick. The inside is deep orange yellow, stringy, not unlike the interior of a mango in appearance and taste, and incloses four or five long, more or less three-cornered nuts with leathery skin to which the stringy pulp firmly adheres, within being the kernel. These fruits are produced by large trees common throughout the warm coastal region of Ecuador, whence they are brought by the natives, in large quantities, to the Guayaquil markets. In Mexico are to be found fruits bearing similar names, but widely differing otherwise."

37816. TRIPHASIA TRIFOLIA (Burm. f.) P. Wilson. Rutaceæ.
(*Triphasia aurantiola* Lour.)

"*Limoncillo.* Grows on a bushy shrub about 6 feet high, with several stems. It is used in making jams and other preserves."

"This is a spiny shrub, having leaves composed of three egg-shaped leaflets, notched at the top; its flowers are white and sweet scented and usually grow singly in the leaf axils, producing 1 to 3 celled berries, containing a single seed surrounded with pulp in each cell. They have a trilobed calyx, as many petals, six distinct stamens, and an ovary elevated on a short stalk and ending in a longish thick style which ultimately falls away. It is a native of southern China, but it is now naturalized in many parts of the East Indies, and is also cultivated in the West Indies. Its fruits are about as large as hazelnuts and have a red skin. When ripe they have an agreeable sweet taste, but if gathered



THE BAKOPARY (RHEEDIA BRASILIENSIS (MART.) PLANCH. AND TRIANA), S. P. I. No. 37802.

The bakopary, native of the State of Rio de Janeiro, Brazil, and occasionally planted in gardens, is a handsome ornamental tree and produces bright-yellow fruits with translucent, white flesh. The flavor is subacid, delicate, and spicy, strongly suggestive of the mangosteen, to which it is related and for which it may prove a good stock. (Photographed at Rio de Janeiro by Messrs. Dorsett, Shamel, and Popenoe, January 2, 1914; natural size; P15415FS.)

THE CARNAUBA PALM (COPERNICIA CERIFERA MARTIUS), S. P. I. No. 37866.

An interesting and valuable Brazilian fan palm found in abundance in the valley of the Rio Sao Francisco, both scattered and in comparatively large groves. The trees attain a diameter of 12 inches or more and a height of 20 to 30 feet. The trunks are used for fence posts and in house construction. The nuts are highly prized for hog feed. Candles made from the wax exuding from the leaves, which is much harder than tallow or paraffin, are dark yellowish brown in color and burn with a clear, yellow, fairly brilliant flame. The wax industry, which was formerly prosperous in this region, is not now very remunerative, owing primarily, it is said, to the fact that extensive landowners have prohibited the cutting of the leaves. (Photographed at Sento Se, Brazil, by Messrs. Dorsett and Popenoe, February 20, 1914; P14910FS.)

37813 to 37818—Contd. (Quoted notes by Mr. F. W. Goding.)

green they have a strong flavor of turpentine, and the pulp is very sticky. They are sometimes preserved whole in sirup and occasionally sent to this country from Manila as lime berries." (*Lindley, Treasury of Botany, vol. 2, p. 1173.*)

37817. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"*Granada.* The tree attains a height of 10 to 15 feet, and a diameter of 2 to 3 inches. The fruit is used for the table and for flavoring."

37818. ANNONA SQUAMOSA L. Annonaceæ. **Sweetsop.**

"This fruit also grows on a tree some 12 to 15 feet high. The fruit is delicious for table use, much more so than the *cherimoya.*"

37819. MAURITIA VINIFERA Martius. Phœnicaceæ. **Burity palm.**

From Januaria, Minas Geraes, Brazil. Collected by Messrs. Dorsett, Shamel, and Popenoe, of the Bureau of Plant Industry. Plants received April 13, 1914.

(No. 72. February 14, 1914.) The Burity palm. See No. 32873 for previous introduction and description.

37820 and 37821. PELARGONIUM spp. Geraniaceæ. **Geranium.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Cuttings received April 16, 1914.

37820. PELARGONIUM CAPITATUM (L.) L'Herit.

For previous introduction see S. P. I. No. 31957.

37821. PELARGONIUM RADULA (Cav.) L'Herit.

For previous introductions see S. P. I. Nos. 31965 and 31966.

Var. *major.*

37822 to 37869.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes (except as otherwise indicated) by Messrs. Dorsett, Shamel, and Popenoe.

37822. OPUNTIA sp. Cactaceæ. **Prickly-pear.**

From Sao Joao del Rey, Minas Geraes.

"(No. 64. January 26, 1914.) Cuttings taken from plants in a back yard in the edge of town. Quite common here."

37823. CEREUS JAMACARU DC. Cactaceæ. **Cactus.**

From Januaria, Minas Geraes.

"(No. 65. February 14, 1914.) *Mandacaru de boi,* growing 25 or 30 feet high. Said to produce an edible fruit, and the wood is commonly used in building. Several large plants were seen here."

Cuttings.

37824 to 37828. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

Cuttings of the following:

37824. "(No. 66. Morrinhos, Minas Geraes. February 16, 1914.) Low-growing cactus called *palma,* said to produce very good fruit. Found on the hillside just back of the old church."

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37825. "(No. 67. Bom Jesus da Lapa, Bahia. February 23, 1914.) Collected on the side of the hill of solid rock which lies at the edge of town."

37826. "(No. 68. Joazeiro, Bahia. February 23, 1914.) From the Ilha do Fogo in the Rio Sao Francisco. Called *palma* by the natives."

37827. "(No. 70. Joazeiro, Bahia. February 24, 1914.) Two pads of nearly spineless Opuntia growing along the fence of the Horto Florestal."

37828. "(No. 71. Bom Fim. March 27, 1914.) Pads of a quite common spiny variety, secured a mile or two out of town on the hillside in the campo."

37829 to 37850.

From Rio de Janeiro. Plants purchased of Eickhoff, Carneiro Leão & Co.

37829. MYRCIARIA EDULIS (Vell.) Skeels. Myrtaceæ. **Cambucá.** (*Eugenia edulis* Vell.)

"The *cambucá*, a native of the State of Rio de Janeiro, Brazil, and commonly cultivated in gardens for its highly appreciated fruit. In growth the tree is very similar to the jaboticaba, the leaves being considerably larger, however, and the bark a darker shade of brown. A row of fine specimens in the Jardim Botanico bears the garden number 58. The fruits are produced both on the small limbs and on the trunk, though the specimens we have seen do not fruit clear down to the ground, as the jaboticaba frequently does. The season is from February to May in this region.

"In form the fruit is oblate, 1½ inches in length, and 2 inches in breadth; stem, practically none, the fruits being sessile, or nearly so; base flattened, cavity none; apex flattened, calyx persistent, a very small, brown disk not over one-eighth of an inch in diameter, level with the surface of the fruit; skins smooth, orange yellow in color, thin, tenacious, fairly tough; flesh divided into two portions, the firm outer flesh one-fourth of an inch thick, leathery, very acid in taste, light orange in color, the inner flesh, constituting the edible portion of the fruit, being soft, jellylike in consistency, translucent, light orange in color, subacid in flavor, greatly resembling some of the passifloras, quite pleasant, and evidently highly esteemed by the Brazilians; seed oval or nearly so, compressed, about seven-eighths of an inch in length, three-fourths of an inch in breadth, and seven eighths of an inch in thickness, the cotyledons light purple in color; seed coat deep brown, reticulated, not adhering very closely to the flesh. For trial in Florida and southern California."

37830 to 37832. EUGENIA spp. Myrtaceæ.

37830. EUGENIA CAMPESTRIS Velloso. **Cambuhy da India.** (*Eugenia arrabidae* Berg.)

"A small, highly ornamental tree, native of Brazil. It is commonly known as *Cambuhy da India* or *Uvaia do campo*. The leaves are small, linear lanceolate, opposite, deep green in color. The flowers, which are produced in September, are axillary

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

and terminal, and are followed by small, yellow, rather acid fruits which are appreciated by the natives. The bark is said to be astringent and aromatic. For trial in southern Florida and southern California."

37831. EUGENIA MYRCIANTHES Niedenzu.
(*Eugenia edulis* Benth. and Hook. not Vell.)
Cereja do Rio Grande.

"The *cereja do Rio Grande*, a small tree native of Brazil, with small, oblong, acute, dark-green leaves, producing in June oblong, purplish red fruits about the size of an olive, with greenish flesh. It is said to bear prodigiously. The fruits are rather hard when ripe, and for this reason are usually mashed into a paste before being eaten. For trial in southern Florida and southern California."

37832. EUGENIA SPECIOSA Cambess.

"A Brazilian myrtaceous fruit listed by Eickhoff, Carneiro Leão & Co. under this name. It is said to be of value for its fruit. For trial in southern Florida and southern California."

"A large much-branched tree, indigenous to the State of Sao Paulo, in Brazil. The leaves are petiolate, elliptic or obovate elliptic, obtuse, pubescent when young, but at length glabrate. The flowers are borne upon solitary peduncles in the axils of the leaves; petals obovate, concave, pellucid punctate, ciliolate. The fruit of this species is edible but is little known, and a good description is lacking." (*Cambessedes. In St. Hilaire, Flora Brasiliae Meridionalis, vol. 2, p. 1351, 1829.*)

37833. GENIPA AMERICANA L. Rubiaceæ. **Genipap.**

"A large tree, native of the American Tropics. In the British West Indies it is called *genipap;* in Brazil, *genipapo.* At Bahia it is very common, and during the season the markets are full of the fruit. Some of the finest specimen trees we saw were fully 60 feet in height, symmetrical and stately in appearance, but devoid of foliage for a part of the year, as the species is deciduous in this climate. The leaves are a foot or more in length, oblong obovate, sometimes entire, sometimes more or less dentate, dark green in color. The flowers, which are produced in November, are small and light yellow in color. The fruits are the size of an orange, broadly oval to nearly spherical in form, russet brown in color. After being picked they are not ready to be eaten until they have softened and are bordering on decay. A thin layer of granular flesh lies immediately under the tender membranous skin, and inclosed by this is a mass of soft, brownish pulp in which the numerous small, compressed seeds are embedded. It is difficult to eat the pulp without swallowing the seeds. The flavor is characteristic and quite pronounced; it may be likened, perhaps, to that of dried apples, but it is somewhat stronger and the aroma is considerably more penetrating.

"Besides being eaten in the fresh state, the fruit is put to numerous other uses, one of the most important of which is the manufacture of a distilled liquor known as *licor de genipapo.* This article retains the peculiar and distinctive flavor of the ripe fruit

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

and is highly esteemed by the Brazilians. Its manufacture is carried on commercially in certain regions. A refreshing drink, known as *genipapada*, is also prepared from the ripe fruit, with the addition of sugar and water, much as lemonade is made in the United States.

"A dye is extracted from the green fruit which, according to Barbosa Rodrigues, is employed by the Mundurucu Indians for tattooing. It is also used for coloring clothes, straw, hammocks, etc.

"Various medicinal uses are attributed to the genipap by the Brazilians; the root is said to be purgative and the juice of the fruit diuretic. For trial in southern Florida and southern California."

37834. CAMPOMANESIA FENZLIANA (Berg) Glaziou. Myrtaceæ. **Guabiroba.**

"A small Brazilian myrtaceous tree with foliage remarkably similar to that of some of the European oaks. The common name, *guabiroba*, which is applied to it, is also given, with various minor variations, such as *gabiroba* and *guabiraba*, to several fruits of the two allied genera Abbevillea and Campomanesia.

"Although occasionally reaching a height of 30 or 35 feet, the guabiroba, as commonly seen in gardens, is a tree of 20 or 25 feet in height, rather sparsely foliated, with elliptical-ovate entire leaves about 2 inches in length, the veins depressed on the dorsal surface, prominent on the ventral surface.

"The fruits greatly resemble small guavas; they are from three-fourths to 1 inch in diameter, oblate in form, the apex crowned by a large disk and prominent 5-parted calyx. In color they are orange yellow when fully ripe, the surface slightly wrinkled and covered with a thick tomentum or down. The skin is thin, and surrounds a layer of granular, light-yellow pulp which incloses the seeds and the soft pulp in which they are embedded. The flavor is similar to that of the guava, but frequently a little stronger. The principal use to which the fruits are put is the manufacture of jams and jellies.

"According to Padre Tavares, there are four varieties of this species, but they are not well known.

"The tree seems likely to prove suitable for cultivation in southern Florida and southern California. It should be given a trial in these regions."

37835. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"The *Goiaba roxa*, or purple guava, a selected variety of the common tropical guava which is cultivated in Rio de Janeiro. It is said to be of superior size and quality and should be given a trial in Florida."

37836. EUGENIA DOMBEYI (Sprengel) Skeels. Myrtaceæ. (*Eugenia brasiliensis* Lam.) **Grumichama.**

"The *grumixama* or *grumichama*. See S. P. I. No. 36968 for description. For trial in Florida and California."

37837 to 37839. MYRCIARIA sp. Myrtaceæ. **Jaboticaba.**

For general information concerning the jaboticaba, see S. P. I. No. 36702.

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37837. "*Jaboticaba murta.* One of the commonest varieties (or species) of the jaboticaba both in Rio de Janeiro and the State of Minas Geraes. The most noticeable difference between it and the other principal variety, *corôa*, is the smaller size of the leaves. Ordinarily the leaves of *murta* are not over 1 inch in length. The fruit is said to be about the same as that of *corôa*.

"It is impossible, at the present time, to determine the actual status of this and other varieties of the jaboticaba. There is great need of a careful study of the species and varieties of Myrciaria to throw some light on the subject."

37838. "*Jaboticaba de cabinho* or *de Para.* While this variety of jaboticaba is offered by one nursery firm, no data concerning it was obtainable. It is said to be of very good quality."

37839. "*Jaboticaba corôa.* This and *murta* are the two commonly recognized varieties of jaboticaba in Rio de Janeiro and Minas Geraes. The leaves of the *corôa* are 2 inches in length, about twice the size of those of *murta*. There is said to be very little difference in the fruits of the two."

37840 to 37845. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

37840. "*Laranja selecta.* This unusually choice orange is one of the two principal varieties grown in the Rio de Janeiro district and has the added distinction of having been, as all the evidence indicates, the parent of the Bahia navel orange, or *Selecta de umbigo*, as it is still called, whose culture in California at the present day forms so important an industry.

"The origin of the *Selecta* orange is obscure. It has been cultivated in Brazil for more than a century, and although it has been superseded in Bahia by its offspring, the navel orange, it is still cultivated commercially near Rio de Janeiro, particularly in the Sao Goncalo district at Nictheroy. The main crop ripens in July, but it commences to come into the market in March and continues until October. On the fancy-fruit stands it brings 2 to 3 milreis (65 cents to $1) per dozen, but in the public market it can be purchased at a considerably lower price. Around Nictheroy the fruit is picked and brought to the market in baskets strapped across the backs of mules or horses.

"The typical *Selecta* differs from the Bahia navel in form and in the absence of a navel, with the accompanying presence of seeds. In other points the two varieties are very similar. The typical *Selecta* as found in the markets may be described as follows: General form roundish oblate; cross section regularly round; size medium large, good specimens being 3 to 3½ inches in length and 3¼ to 3½ inches in breadth; stem sometimes inserted slightly obliquely; base usually tapering very little, flattened for a distance of one-half to three-fourths of an inch from the stem insertion, sometimes slightly rough, due to thickening of the skin; cavity none or practically none; apex flattened and frequently depressed for a distance of half an inch from the stigmatic point; surface varying from

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

smooth to rather coarsely pitted; color varying from yellowish green to greenish yellow early in the season, becoming entirely yellow later and bright orange-yellow when fully ripe; skin one-eighth to one-fourth of an inch thick, usually thickest around the base of the fruit, the oil glands large and abundant; segments 11 to 13, rag extremely tender, but core rather large, frequently one-fourth of an inch in diameter at the center of the fruit, usually solid; flesh light orange, tender, very juicy; flavor never mawkish or insipid, always sprightly, subacid, with plenty of character, probably as good as the Bahia navel, and with greater acidity; quality very good; seeds variable in number, ranging from 1 to 20, but commonly about 12 perfect ones and 6 abortive or undeveloped ones, in size rather large, varying from one-fourth to one-half an inch in length.

"It is common to find rudimentary navels in *Selecta* oranges from trees which ordinarily produce normal fruits. This phenomenon is so common that in some lots of fruit examined in the Rio de Janeiro markets as many as 10 per cent showed rudimentary navels in varying stages of development. In some instances the navels are as large as in an average navel orange.

"Natives of Rio de Janeiro generally consider the *Selecta*, as grown in that locality, superior to the navel orange as grown in Bahia. The Bahians, of course, do not admit this, but the fact remains that *Selecta* as grown in Rio de Janeiro is somewhat more highly flavored than the Bahia navel. For this and other reasons it seems important that *Selecta* be given a thorough trial in the orange-growing sections of the United States."

37841. "*Laranja selecta branca.* The white *Selecta* orange, a subvariety of the commercially important *laranja selecta*, propagated by the firm of Eickhoff, Carneiro Leão & Co. As yet it does not appear to be widely distributed, and we have had no opportunity to examine specimens of its fruits. It is said to be a desirable form and should be given a trial along with *laranja selecta*."

37842. "*Laranja selecta rajada.* Another subvariety of the *Selecta* orange, of which no description is available. For trial in the orange-growing sections of the United States."

37843. "*Laranja da pera.* This variety is distinguishable from *Selecta* by its elongated form, smaller size, thinner skin, and sweeter flavor. It is extensively cultivated in the vicinity of Rio de Janeiro, especially at Maxambomba and in the neighborhood of Cascadura. It is not pyriform in shape, as the name 'pear orange' would indicate, but is usually oval, and as seen in the markets is rarely more than 3 inches in diameter. Ripening at the opposite season of the year from *Selecta*, the two do not usually compete in the markets.

"The typical fruit may be described as follows: Form broadly oval to nearly spherical; cross section round; size medium small, length 2⅞ inches to 3½ inches, diameter 2½ to 3¼ inches; stem inserted squarely; base rounded, cavity none

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

or practically none; apex rounded; surface smooth; color when fully ripe bright orange; skin one-eighth of an inch thick, pliable, oil glands rather small; segments commonly 10; rag rather tough, core open, one-fourth to three-eighths of an inch in diameter; flesh golden yellow, tender, exceedingly juicy; flavor sweet, apt to be cloying when the fruit is very ripe; quality good; seeds averaging 8 to 10, small to medium size.

"While most abundant in the markets about Christmas time, the season commences in late September or October and extends to the end of January. The variety is an extremely prolific bearer—quite a contrast in this respect to *Selecta*, whose bearing habits are like those of the Bahia navel orange. The branches of *Pera* trees are not infrequently so heavily laden with fruits that they have to be propped to prevent them from breaking.

"One of the finest groves of this variety seen in the vicinity of Rio de Janeiro is that of Shr. Cezar Augusto Henriques, at Maxambomba. The trees here are all budded on the sour orange (*laranja da terra*), the commonest stock in this region and generally considered the best; at 4 years of age the budded trees produce on an average 500 fruits per tree, according to the statement of the owner. The usual price obtained for the fruits is 5 milreis (about $1.60) per hundred. The orchard is situated on a hillside, the soil being rich clay loam, grayish in color. No deep cultivation is given the trees, but the surface is frequently hoed to keep down weeds.

"The variety should be given a trial in the orange-growing sections of the United States to determine its quality and value, as well as its season of bearing, under different climatic conditions."

37844. "*Laranja natal* (Christmas orange), as the name indicates, is so named because it ripens at Christmas time. In general appearance the variety is strikingly similar to *laranja pera*, so much so, in fact, that closer acquaintance may prove it to be *Pera* under another name. Its bearing habits are the same, and the fruits of both to the casual observer are identical in appearance. At Maxambomba, where large orchards of *Pera* are located, this variety does not appear to be grown; at Nictheroy, on the other hand, *Pera* does not seem to be common, *Natal* taking its place; all of which suggests that it may be known in the two different localities under different names. For trial in the orange-growing sections of the United States."

37845. "The so-called *laranja verticillata*, a variety grown by Eickhoff, Carneiro Leão & Co. The leaves show the greatest variation in form and size, making the variety of interest to plant breeders. The fruit is of good size, but is considered of poor quality. For cultivation by those interested in the breeding of citrus fruits."

37846 to 37848. MANGIFERA INDICA L. Anacardiaceæ. Mango.

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

Plants of the following:

37846. "*Manga da rosa*, or 'Rose mango,' a fruit of good size and attractive appearance, is extremely popular in the markets of Rio de Janeiro during the holiday season, when single specimens sell from 2 to 2½ milreis, the equivalent of 65 to 80 cents. Most of the fruits marketed in Rio de Janeiro are shipped down from the vicinity of Pernambuco, where the variety is said to be extensively grown. It is also grown at Bahia, and to a limited extent at Rio de Janeiro, but is not considered to reach such a high state of perfection in the latter region as it does farther north.

"As seen in Bahia and Rio de Janeiro, the typical fruit of this variety may be described as follows: General form compressed oval, tending to cordate, cross section oval; size medium large, weight 480 grams, length 4⅝ inches, breadth at widest point 3¾ inches; stem insertion oblique, stem long, rather slender; base slightly flattened, cavity shallow, flaring, somewhat irregular; ventral shoulder very broad and rounded, usually high; dorsal shoulder less prominent, sometimes falling; apex very slightly beaked, but not sharp, nak 1 inch above the longitudinal apex, a small depression; surface smooth, color rich golden yellow tinged with salmon, one side of fruit overspread with bright rose red, varying to salmon red or flame red; dots and marblings subcutaneous, slightly lighter in color than surface; skin one-sixteenth of an inch in thickness, adhering rather closely, tough and firm, making the fruit a good shipper; flesh 1 inch thick on shoulder, slightly less on body of fruit, deep yellow in color, very little aroma, very juicy, firm and meaty, but rather fibrous, particularly near the ventral and dorsal edges of the seed; flavor sweet, slightly aromatic, but not so spicy and sprightly as in some of the better Indian mangos; quality good; seed large, 3⅛ inches long, 2 inches broad at widest point, about five-eighths of an inch thick, oblique, pointed at apical end, polyembryonic, fibrous over its entire surface but especially on edges, where the fibers are 1 inch long; season at Bahia December to late January.

"*Manga da rosa* is generally believed to have been introduced into Brazil from Mauritius. It is propagated by inarching, 2-year old grafted trees selling at the equivalent of $2.35 to $3.35 each. Because of its unusually handsome appearance and admirable shipping and keeping qualities it seems worthy of a careful trial in southern Florida."

37847. "*Carlota.* One of the few grafted varieties of mango cultivated in Brazil. It is known both at Rio de Janeiro and at Bahia. While rather small in size, it is of good flavor and less fibrous than many Brazilian mangoes. As seen in the garden of Dr. Antonio Calmon do Pin e Almeida, on the island of Itaparica, near Bahia, it may be described as follows: General form roundish oblate, compressed laterally, cross section ovate; size medium small, length 3 inches, breadth 3½ inches, thickness 2¾ inches; stem inserted squarely or nearly so; base flattened, slightly sunken on ventral side of

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

stem and raised on dorsal side, cavity practically none; dorsal shoulder rounded; ventral shoulder very broad, level; apex blunt, nak three-eighths of an inch above the longitudinal apex, slightly sunken; surface smooth, dull orange yellow in color, tinged with green; dots numerous, subcutaneous, small, rounded, lighter in color than surface; skin medium thick, firm and tough, adhering closely; flesh bright orange in color, aroma pronounced and agreeable, juicy, firm, slightly fibrous; flavor rich, fairly spicy, sweet; quality good; seed oblong, apparently monoembryonic, 2⅜ by 1¾ by 1 inch, fiber long on ventral edge, elsewhere short and fine; season December to January. Considered worthy of a trial in the mango-growing sections of Florida."

37848. "*Augusta.* A small mango, but one of the few varieties propagated in Brazil by inarching or grafting. As seen growing in the garden of Dr. Antonio Calmon do Pin e Almeida, on Itaparica Island, near Bahia, it may be described as follows: General form obliquely oval; cross section oval; size small, length 2¾ inches, breadth 2½ inches, thickness 2 inches; stem inserted obliquely; base obliquely flattened, cavity practically none; dorsal shoulder rounded, low; ventral shoulder rounded, high; apex rounded, nak five-sixteenths of an inch above the longitudinal apex, a slight depression; surface smooth, green yellow in color, tinged and overspread with orange on cheek; dots numerous, subcutaneous, small, rounded, lighter in color than surface; skin thick, firm and tough, adhering closely; flesh pale orange in color, very juicy, aroma pleasant but not pronounced; flavor subacid, not very aromatic; seed large for size of fruit, ovate reniform, 2¼ by 2¼ by 1 inch, very fibrous over entire surface, monoembryonic; season December to January. For trial in the mango-growing sections of Florida."

37849. PANICUM BARBINODE Trinius. Poaceæ. **Angola grass.**

"*Capim de Angola,* or 'Angola grass,' of the variety cultivated at Rio de Janeiro. M. Pio Corrêa considers this a forage crop of ordinary value, but states that in some sections of Brazil it is highly esteemed."

37850. STENOTAPHRUM SECUNDATUM (Walt.) Kuntze. Poaceæ. **Shore-grass.**

"A broad-leaved grass, of which there are two varieties, one self-colored and one variegated. Both are extensively employed in Rio de Janeiro as lawn grasses, and while rather coarse for this purpose, they seem to be better adapted to the climatic conditions than many other lawn coverings which are planted."

37851 to 37853. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

37851. "(No. 138a. Morrinhos, Minas Geraes, Brazil. February 16, 1914.) An almost thornless species common on the rocky hillside back of town. Fruit said by the natives to be very good. Cuttings obtained and plants photographed."

Plant of No. 66 [S. P. I. No. 37824].

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37852. "(No. 159a. Joazeiro, Bahia, Brazil. February 23, 1914.) A small cactus on the Ilha do Fogo in the Rio Sao Francisco between Joazeiro and Petrolina. Pads flat, small, almost spineless. Called *palma* by the natives."

Plant of No. 68 [S. P. I. No. 37826].

37853. "(No. 189a. Joazeiro, Bahia, Brazil. February 24, 1914.) Seed of a nearly spineless opuntia from Horto Florestal."

Plant of No. 70 [S. P. I. No. 37827].

37854 to 37860. ORYZA SATIVA L. Poaceæ. **Rice.**

37854. "(No. 117a. Pirapora, Minas Geraes, Brazil. February 9, 1914.) Taken from a spot in the field where the thrasher had stood in the previous year and where the plants were twice as tall as in other parts of the field. From the fazenda of Col. Caetano Mascarenhas."

37855 to 37857.

From Rio de Janeiro, Brazil. March 23, 1914. Seed from Naples, Italy.

37855. "(No. 206a.) Called *Louro do Japão.* (Japanese golden)."

37856. "(No. 208a.) Called *Kitaima do Japão.*"

37857. "(No. 209a.) Var. *branco*, or white."

37858. (Pirapora, Minas Geraes, Brazil. February 9, 1914. One head taken from specimen No. 358b [S. P. I. No. 37854].)

37859 and 37860.

"(Bahia, Brazil, December 18, 1913. Single heads taken from specimen No. 114b.) Specimens taken from rather dry upland, on the estate of Col. João Argollo, Agua Comprida, near Bahia. Cultivated on a small scale only."

37859. A. Length of head 10¾ inches.

37860. B. Length of head 9 inches.

37861 to 37865. SPONDIAS TUBEROSA Arruda. Anacardiaceæ. **Imbu.**

37861 and 37862. From Januaria, Minas Geraes, Brazil, February 15, 1914.

37861. "(No. 128a.) Seeds of the *imbu* or *umbu*, one of the most popular fruits of this region. The tree, which is wild here and quite common in some places, is of a peculiar habit of growth, branching 4 to 6 feet above the ground and forming a very broad, dense, and flat-topped head of foliage. When the large limbs are cut and placed in the ground as fence posts, they take root and grow. The fruits, which are sometimes produced in great profusion and are ripe at this season, are oval in form, about 1½ inches in length, and light green in color. The skin is

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

rather tough, and incloses the translucent, juicy pulp in which is embedded the single large seed. The flavor of the pulp is rather suggestive of a sweet orange, and is agreeable in the extreme. Aside from being consumed in the fresh state, the fruit is extensively used for the manufacture of jellies and jams, in which a considerable trade has been built up. In addition, a popular dessert called *imbuzada* is made from the slightly unripe fruit by mixing the strained and sweetened pulp with milk. The ease of its culture, together with the superiority of its fruit, recommends the *imbu* for careful trial in Florida and California."

37862. "(No. 133a.) The *imbu*. See 128a [S. P. I. No. 37861] for description. Seeds procured from boys who picked them up off the ground where they had been discarded after the fruit was eaten. Seeds may not all grow; a few appeared to be old."

37863. "(No. 149a. Remanso, Brazil. February 20, 1914.) For description, see No. 128a [S. P. I. No. 37861]."

37864. "(No. 157a. Joazeiro, Bahia, Brazil. February 23, 1914.) Seed of the *imbu*, picked up along the bank of the river where the fruits had been eaten and the seeds dropped. See No. 128a [S. P. I. No. 37861] for description."

37865. "(No. 223a. Bom Fim, Bahia, Brazil. February 27, 1914.) Seeds collected on the streets of Bom Fim, where they had been dropped by the natives after eating the fruit. See No. 128a [S. P. I. No. 37861] for description."

37866. COPERNICIA CERIFERA Martius. Phœnicaceæ. **Carnauba palm.**

"(No. 182a. Joazeiro, Bahia, Brazil. February 24, 1914.) Seeds of the *carnahuba*, a valuable wax palm found along the banks of the Rio Sao Francisco from well above Barra to below Joazeiro. In places it grows in great abundance, forming large groves along the banks of the stream. The leaves are fan shaped, rather finely cut, about 2 to 3 feet in diameter, light green in color. The plant frequently attains a height of 25 to 30 feet. The wax is extracted by cutting the leaves and drying them in the sun, when the wax exudes in the form of a powder. Candles made from it are yellowish brown in color, extremely hard, and burn with a clear yellow, fairly brilliant light. They sell for 40 reis (1.2 cents) each, but very few are made nowadays and they are difficult to obtain. The fruit is valued for hog feed and many of the large landowners are preserving the trees for the production of fruit. The trunks are extensively employed in building houses. The wax industry was formerly prosperous in this region, but is not now very remunerative, and only small quantities are exported. The leaves are used for brooms, etc. For trial in Florida and California."

For an illustration of the carnauba palm tree, see Plate IV.

37867. COCOS CORONATA Martius. Phœnicaceæ. **Nicuri palm.**

"(No. 217a. Bahia, Brazil. March 18, 1914.) Seeds of the nicuri palm. See No. 29a [S. P. I. No. 36927] for description."

37822 to 37869—Contd. (Quoted notes by Mr. Dorsett and others.)

37868. ATTALEA FUNIFERA Martius. Phœnicaceæ. **Piassava palm.**

"(No. 218a. Bahia, Brazil. March 20, 1914.) A large, pinnate-leaved palm, found in certain sections of the State of Bahia. It is valuable because of the fiber which it furnishes, as well as for its hard, black fruits, which are used to make buttons. The oily kernel, elliptical and nearly 2 inches in length, is used as an article of food by the natives of the poorer classes. Piassava fiber is an important article of export at Bahia, and the manufacture of piassava brooms forms an industry of considerable extent. The fiber is extracted from the leaf stalks, and is coarse, stiff, cinnamon brown in color. For trial in the warmest sections of the United States."

37869. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. **Dendé palm.**

"Bahia, Brazil. Seeds of the dendé palm. See No. 39a [S. P. I. No. 36973] for description."

37870 and 37871. PANAX QUINQUEFOLIUM L. Araliaceæ.
(*Aralia quinquefolia* Decne. and Planch.) **Ginseng.**

From Peking, China. Presented by His Excellency Ts'ao Julin, twice Minister for Foreign Affairs, through Dr. Paul S. Reinsch, American minister, Peking, China, at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 18, 1914.

"Kwantien and six other places in Fengtien Province have always been famous for the cultivation of ginseng. There are two varieties—'Mountain ginseng' (*Shan shên*) and 'Garden ginseng' (*Yüan shên*). Mountain ginseng is popularly known as 'Great Mountain ginseng' (*Ta shan shên*), or 'stick' (*Pang chi*). The popular name of 'Garden ginseng' is 'Sprouting ginseng' (*Yang shên*).

"'Mountain ginseng' is cultivated at high altitudes. The length of the root in the soil is over 2 feet. The stalk puts forth branches. The plant commences to grow in the spring and ceases in the autumn. It is not injured either by drought or by floods, and is consequently easy to cultivate.

"'Garden ginseng' has always been grown on shady slopes and in black earth. Every year at harvest time the seeds are stripped off and soaked in clear water. The outer skin is rubbed off and the seeds dried in the sun. They are then mixed with clean earth and placed on the ground. At the end of a year they are taken out and replanted. In the second year they will put forth buds, and in the fourth they will bear seeds.

"If, after stripping off the seeds, it is not desired to plant them the coming year, the soaking process should be omitted and the seeds left in their skins and wrapped up and placed in a high place, out of reach of the least dampness. They may then be left for any number of years. When planted they should be left in their skins in 2 inches of earth. After two years they will begin to put forth buds, and after four years they will bear seeds. But after first being planted they should be covered with mats and kept moist by fine rain." (*Ts'ao Julin.*)

37870. "Seeds of the wild ginseng from Tunghwahsien, located in Hsingking Subprefecture, Shengking Province, Manchuria, east of Mukden, latitude 41° 37′ north and longitude 128° 7′ east." (*Ts'ao Julin.*)

37871. "Seeds of the wild ginseng from Fusung." (*Ts'ao Julin.*)

37872 to 37936.

From Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes (except as otherwise indicated) by Messrs. Dorsett and Popenoe.

37872. ROLLINIA sp. Annonaceæ. **Rollinia.**

"(No. 76a. Larvas, Minas Geraes, Brazil. January 24, 1914.) Seeds of a wild *araticum* collected near Lavras."

37873 to 37877.

From Sao Joao del Rey, Minas Geraes, Brazil.

37873. HIERACIUM sp. Cichoriaceæ.

"(No. 77a. January 25, 1914.) Seeds of a small plant, apparently an annual, occasionally seen along the watercourses and around the edge of town. It grows to a height of 1½ to 2 feet and produces bright scarlet flowers about half an inch in diameter."

37874. CAESALPINIA sp. Cæsalpiniaceæ.

"(No. 88a. January 26, 1914.) Shrub 15 to 18 feet high, used as a hedge plant; stems very thorny. Seeds said to be poisonous. Collected near the edge of town."

37875. JATROPHA CURCAS L. Euphorbiaceæ. **Mamona.**

"(No. 89a. January 26, 1914.) A low, spreading tree; sometimes used as a hedge plant. Fruit a 3-celled capsule, containing three seeds. We were told that the common name is *mamona*, but this belongs to the castor bean."

37876. ORMOSIA MONOSPERMA (Swartz) Urban. Fabaceæ.

"(No. 90a. January 26, 1914.) A bean used by the negroes to keep off fever. A necklace of them is placed around the children's necks. We have not seen the tree which produces them. These were purchased from a negro woman."

37877. CIPURA PALUDOSA Aublet.

"(No. 91a, January 26, 1914.) A beautiful dwarf irislike plant, growing along the river bank. Its grasslike leaves grow to a height of 12 or 15 inches under favorable conditions; the flowers are not over 1 inch in diameter, but of a most delicate light-blue color, similar to that of the *Iris pallida dalmatica*. Well worthy of a trial as a border plant in warm climates and for forcing."

"Root a round tunicated bulb, covered with membranous integuments. Leaves radical, about a foot high, narrow lanceolate, laxly plicate, 3-nerved or thereabouts, with longitudinal parallel lamellose ribs, thin, grass green, quite smooth, far acuminate, upright, springing from even petiolelike convolute submembranous bases, equitant near the bulb. Stem round, short, strict, terminated by the flower fascicle, which rises from the bosom of a 2-valved involucre, the outer valve of which is similar to the leaves and though smaller yet far longer than the fascicle and even with the summits of the other leaves, inner valve several times less [than the outer], convolute. Pedicels of the fascicle equal to their valves, 1-flowered; flowers several, expanding in succession, and of very short duration. A native of Guiana, where it was found by Aublet in moist meadows (savannahs) at the foot of Mount Coutou, flowering in August; he says it varies with blue flowers." (*Curtis's Botanical Magazine. pl. 1803.*)

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

37878. CROTALARIA sp. Fabaceæ.

"(No. 93a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Seeds of a leguminous shrub growing on the edge of a small stream below town. Height about 6 feet. Flowers pealike, bright yellow in color. To be tried as a green cover crop."

37879 and 37880. ROLLINIA spp. Annonaceæ. **Araticum.**

37879. ROLLINIA DOLABRIPETALO (Raddi) St. Hilaire.

"(No. 94a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Seed from *araticum* fruit, large variety with prominent protuberances, partly eaten away by birds."

37880. ROLLINIA GLAUCESCENS Sond.

"(No. 95a. Sao Joao del Rey, Minas Geraes, Brazil. January 26, 1914.) Tree about 15 feet high, leaves oblong lanceolate, smooth, the fruits about 1 inch in diameter, more or less heart shaped, bright orange-yellow in color, the surface smooth or nearly so. Flavor only fair, and seeds almost fill the interior of the fruit."

37881. MICHELIA CHAMPACA L. Magnoliaceæ. **Champac.**

"(No. 96a. Sao Joao del Rey, Minas Geraes, Brazil. January 26, 1914.) The Indian *champac*, very popular here in Brazil as a street and ornamental tree. Its growth is symmetrical and compact, usually rather pyramidal in habit. The largest specimen seen was about 40 feet in height. The bright orange-colored, star-shaped flowers 2 inches in diameter have a delightful fruity fragrance."

37882. ROLLINIA LAURIFOLIA Schlecht. Annonaceæ.

"(No. 98a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Seeds from one fruit, shown cut in halves in photograph. This is the species with prominent protuberances on the surface, fruit heart shaped, about 1½ inches in length."

37883. MAURANDIA BARCLAIANA Lindley. Scrophulariaceæ.

"(No. 99a. Barbacena, Minas Geraes, Brazil. January 30, 1914.) A small vine, found in the cemetery of the church of Boa Morte. It grows 5 or 6 feet in height and forms a dense mat of foliage, the individual leaves not more than 1 inch in diameter. The flowers, which are produced in the utmost profusion, are funnel form, about 1 inch in diameter, and of a rich blue-purple color. A handsome ornamental, well worthy of a trial in different parts of the United States."

37884. COSMOS SULPHUREUS Cav. Asteraceæ. **Cosmos.**

"(No. 100a. Bello Horizonte, Brazil. February 2, 1914.) An annual plant, very similar in growth and appearance to our northern cosmos. Found near the railroad track below town, apparently escaped from cultivation. Flowers bright orange, 1½ inches in diameter, identical in form with our cosmos flowers. May already be known in the United States; if not, it is well worthy of cultivation."

37885. RUBUS ROSAEFOLIUS Smith. Rosaceæ. **Raspberry.**

"(No. 101a. Sao Joao del Rey, Minas Geraes, Brazil. January 26, 1914.) Seeds of the *Amora* berry, which appears to us to be *Rubus rosaefolius*. The plant grows in an apparently naturalized state around cultivated areas and in abandoned gardens. The berries are larger than raspberries, bright red in color, and of good flavor, though a trifle lacking in character."

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

37886. CESTRUM sp. Solanaceæ.

"(No. 102a. Sitio, Minas Geraes, Brazil. January 28, 1914.) A shrub, 6 to 8 feet high, with lanceolate leaves and corymbs of tubular, orange-yellow flowers, about 1 inch long. Looks very similar to one of the Cestrums grown in California."

37887. RUBUS sp. Rosaceæ.

"(No. 103a. Sitio, Minas Geraes, Brazil. January 28, 1914.) Plant, 5 to 6 feet high, found in the river valley below town. The fruits, which are produced very abundantly, are the size and form of blackberries, but light green in color when ripe and very sweet in flavor. Of possible value for hybridization."

37888. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

"(No. 105a. Barbacena, Minas Geraes, Brazil. January 30, 1914.) Sulphur bean. According to Mr. Frank R. Brainard, Chefe das Culturas, this is one of the best dry beans cultivated on the experimental farm. It is used as a dry bean. He does not know whether it can be used as a snap bean. Very attractive in appearance."

37889. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"(No. 104a. Bello Horizonte, Brazil. February 2, 1914.) Seed from a fruit purchased in the market here. One of the largest we have seen in Brazil, about 4 inches in diameter and of fairly good quality."

37890 and 37891. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

From Barbacena, Minas Geraes, Brazil.

37890. "(No. 106a. January 30, 1914.) *Amendoim* or 'peanut bean,' from the experimental farm of the Aprendizado Agricola. A dry bean of large size and attractive appearance, considered of excellent quality."

37891. "(No. 107a. January 30, 1914.) Spotted bean, a variety considered by Mr. Frank Brainard, Chefe das Culturas of the Aprendizado Agricola, as a very good quality."

37892. ROLLINIA GLAUCESCENS Sond. Annonaceæ.

"(No. 108a. Sao Joao del Rey, Minas Geraes, Brazil. January 9, 1914.) Seeds of the *araticum* sent in under No. 95a [S. P. I. 37880], which see for description. Collected on our first visit to Sao Joao."

37893. ARISTOLOCHIA GALEATA Mart. and Zucc. Aristolochiaceæ. **Birthwort.**

"(No. 110a. Bello Horizonte, Minas Geraes, Brazil. February 2, 1914.) A vine found on the fence along the railroad track 5 or 6 miles east of town. It covers the fence for a distance of 15 or 18 feet, and produces its peculiar shaped, large, spotted flowers in great profusion. Brown is the predominating color of the flowers, the mottlings being greenish and cream colored."

37894. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"(No. 111a. Vespasiano, Minas Geraes, Brazil. February 5, 1914.) Seed from plants growing in a cornfield a short distance east of town along the railroad track. The plants were climbing up the cornstalks, which were 10 to 15 feet high."

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

37895. BUNCHOSIA sp. Malpighiaceæ. **Café do matto.**

"(No. 112a. Lagoa Santa, Minas Geraes, Brazil. February 5, 1914.) *Café do matto.* A tree about 25 feet high, producing clusters of bright-red fruits the size of small cherries. Each fruit contains one large seed surrounded by a viscous, sticky substance, of sweetish flavor but very astringent. The leaves are said to make a tea equal to *maté*, and the fruit to have medicinal value."

37896. ZEA MAYS L. Poaceæ. **Corn.**

"(No. 114a. Vespasiano, Minas Geraes, Brazil. February 5, 1914.) Two ears of corn from a field in the edge of town. Picked at random. The crop in general is not yet ripe."

37897. PSIDIUM sp. Myrtaceæ. **Guava.**

"(No. 127a. Pirapora, Minas Geraes, Brazil. February 10, 1914.) A wild guava, produced by a small tree 15 to 20 feet high, abundant along the banks of the Rio Sao Francisco in this region. The fruits, while rather small in size, are remarkable for the large proportion of pulp to seeds. The seeds are not only small but very few in number. The pulp is yellowish in color and of very agreeable flavor, having very little of the musky flavor so much objected to in most guavas. The size of the fruit is about 1 to 1¼ inches in length by 1 inch in breadth, color light green, light yellow when fully ripe. Should be given a trial in Florida and California."

37898. BROMELIA sp. Bromeliaceæ. **Bromelia.**

"(No. 118a. Pirapora, Minas Geraes, Brazil. February 9, 1914.) A plant similar in general appearance to the pineapple, except that the spines on the leaf margins are fewer and larger. Common on the campo here. Fruits individually about 1½ inches in length, plump, oval, containing several seeds. Very similar to the *gravatá* sent in from Bahia. For breeding experiments."

37899. ATTALEA sp. Phœnicaceæ. **Palm.**

"(No. 119a. Pirapora, Minas Geraes, Brazil. February 9, 1914.) Seed of a native palm from the region near the Rio Sao Francisco below here. Kernels said to be very good to eat. Presented by Mr. Barker, of this place, who states that there were 82 nuts in the cluster from which this came."

37900. CELTIS MORIFOLIA Planch. Ulmaceæ. **Jua mirim.**

"(No. 121a. Pirapora, Minas Geraes, Brazil. February 10, 1914.) *Jua mirim* or small *jua*, growing on the river bank right in town. The tree is about 30 feet high, somewhat spreading in habit. Fruits about one-fourth of an inch in diameter, orange colored, much sought after by children."

37901. BARYXYLUM DUBIUM (Spreng.) Pierre. Cæsalpiniaceæ. (*Peltophorum vogelianum* Walp.)

"(No. 122a. Pirapora, Minas Geraes, Brazil. February 10, 1914.) Seed of a large tree 50 to 60 feet high, broad and spreading, giving fine shade. A handsome ornamental tree. Flowers bright yellow, with golden-yellow anthers. Called *cana fistula* here, but this name properly belongs to another plant. Seed obtained from trees growing on the bank of the Rio Sao Francisco at the landing across from railroad station."

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

37902. ROLLINIOPSIS DISCRETA Safford. Annonaceæ. **Monkey fruit.**

"(No. 125a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Possibly a Guatteria. Small tree 20 to 25 feet high, common between here and Brejo, 4 miles back from the river. Called *fruta de macaco,* not eaten by the people."

37903. MAURITIA VINIFERA Martius. Phœnicaceæ. **Burity palm.**

"(No. 126a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Seeds of the *Burity* palm, which grows in low, moist places along the river. Its fiber is used for making hammocks, cordage, etc. These seeds were purchased from a native, and some of them may be too old to germinate."

37904. CARYOCAR BRASILIENSIS Cambessedes. Caryocaraceæ. **Piqui.**

"(No. 129a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Fruit of the *piqui,* a common wild fruit in Minas Geraes. It grows on the campos from here to Lavras, where we first saw it. The fruit is just commencing to ripen; the layer of yellow pulp surrounding the seed is edible and has a peculiar taste. The tree grows to a height of 30 feet or more and is broad and spreading in habit."

37905. XYLOPIA CARMINATIVA (Arruda) R. E. Fries. Annonaceæ. **Monkey's-pepper.**

"(No. 131a. Januaria, Minas Geraes, Brazil. February 15, 1914.) *Pimenta de macaco,* 'monkey's-pepper.' Sold in the market here for seasoning and also used as a remedy for intestinal troubles. Said to be produced by a small tree native to this region. For trial in California and Florida."

37906. AMBURANA CLAUDII Schwacke and Taub. Fabaceæ. **Fragrant imburana.**

"(No. 134a. Januaria, Minas Geraes, Brazil. February 15. 1914.) *Imburana de cheiro,* fragrant imburana, a seed highly esteemed in this region. It is ground and mixed with tobacco, to be taken in the form of snuff, and a tea prepared from it is valued as a remedy for colds. Produced by a tree native to this region." Large leguminous tree with odd pinnate leaves composed of 11 to 15 alternate leaflets and large clusters of cream-white flowers. The valuable wood, which is used for flooring, window frames, vats, etc., is much sought after. The crushed seeds are used to perfume tobacco. Both the wood and the seeds have a strong odor of coumarin. (Adapted from *Engler and Prantl, Natürlichen Pflanzen-Familien, III,*[3] *p. 387.*)

See S. P. I. No. 37019 for previous introduction.

37907. ZIZIPHUS JOAZEIRO Mart. Rhamnaceæ. **Jua.**

"(No. 135a. Januaria, Minas Geraes, Brazil. February 14, 1914.) Seeds of the *jua,* called here *jua de boi.* A tree growing to 40 or 50 feet high, symmetrical and compact in growth, densely foliated and very thorny, the thorns, however, being short and rather small. The fruits are used only as a remedy, a tea made from them being considered an emollient and very good for bronchial affections. Stock eat the fruit. The tree is believed to have considerable value as forage, particularly for dry lands, where it succeeds extremely well."

37908. ANNONA SQUAMOSA L. Annonaceæ. **Anona.**

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

"(No. 136a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Here called *pinha*. Just now it seems to be the most important fruit in Januaria; the season is at its height and the fruits are hawked about the streets at 2 vintens (40 reis) each. This tree bears so heavily here and is of such fine quality that these few seeds are sent because of the possibility that they may prove to be a superior strain."

37909. ZEA MAYS L. Poaceæ. **Corn.**

"(No. 137a. Bom Jesus da Lapa, Bahia, Brazil. February 17, 1914.) Two ears of corn purchased in the village. The common type of corn in this region, used for the manufacture of *farinha* (corn meal, for human consumption) and for hog feed."

37910. ATTALEA sp. Phœnicaceæ. **Palm.**

"(No. 130a. Januaria, Minas Geraes, Brazil. February 15, 1914.) Seed of the palm sent in under No. 119a [S. P. I. No. 37899] from Pirapora. A large species, growing along the banks of the Rio Sao Francisco between here and Pirapora. Called *palmeira* by the natives. Each fruit contains several seeds."

37911. ANNONA SPINESCENS Martius. Annonaceæ. **Anona.**

"(No. 140a. Urubu, Bahia, Brazil. February 17, 1914.) Seed of an *araticum* growing on low, marshy land near the river bank. Bushy shrub 10 to 15 feet high, which because of its compact form and stout spines may be of value as a hedge plant. The fruit, about 3 inches in length and orange-red in color, is edible, but of little value. Hogs seem to be very fond of it. We saw this plant first at Morrinhos; there it was scarce, here it is the commonest plant along the riverside."

For illustrations of this shrub in its native habitat and of its fruits, see Plates V and VI.

37912. CAPSICUM sp. Solanaceæ. **Red pepper.**

"(No. 141a. Barra, Bahia, Brazil. February 18, 1914.) Small pepper, collected near a native hut at a landing above Barra where we stopped to take on wood."

37913. SARCOSTEMMA APICULATUM Decne. Asclepiadaceæ.

"(No. 146a. Xiquexique, Bahia, Brazil. February 19, 1914.) Seed of a sand-binding plant collected on the banks of the Rio Sao Francisco. This plant is most vigorous in growth and forms a loose mat close to the ground, as well as growing up to 4 or 5 feet high in a tangled mass under favorable conditions. For trial in Texas and the Southwest."

37914. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

"(No. 147a. Pilao Arcado, Bahia, Brazil. February 19, 1914.) Seeds collected from plants growing on the bank of the Rio Sao Francisco, in an apparently naturalized state, a few miles above Pilao Arcado."

37915. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"(No. 148a. Barra, Bahia, Brazil. February 19, 1914.) Known here as *Feijão gurutuba*. In the dry regions of the interior it is said to ripen in 60 days from the sowing of the seed, and to produce most abundantly. Planted in October and November, the beginning of the wet season, in hills 18 to 20 inches apart. Considered specially suited to dry soils. Varieties badly mixed; should be separated into various types if used for planting."

37916. JATROPHA ACANTHOPHYLLA Löfgren. Euphorbiaceæ. **Favelleira.**

AN ORANGE-COLORED SWAMP ANONA (ANNONA SPINESCENS MARTIUS), S. P. I. NO. 37911, ON THE BANKS OF THE RIO SAO FRANCISCO.

This spiny, compact shrub is abundant on the banks of the Rio Sao Francisco near Urubu, Bahia. The plants are low and shrubby, with numerous heavy spines. They grow in low, swampy situations and along the edges of pools, streams, and lakes. The fruit, heretofore unknown to science, is of a brilliant reddish orange color. The flesh, which is practically of the same color, is sweetish, rather insipid, and unattractive. It has been introduced as a possible wet-land stock for the cherimoya and for breeding purposes. (Photographed at Urubu, Bahia, by Messrs. Dorsett and Popenoe, February 17, 1914; P14870FS.)

FRUITS OF THE SWAMP ANONA (ANNONA SPINESCENS MARTIUS), S. P. I. No. 37911.

When fully ripe these fruits are so soft that even the gentlest handling will break the skin. The flesh, which is of a brilliant reddish orange color, is sweetish, rather insipid, and unattractive, and although known to be edible, it is not esteemed by the natives. Introduced for breeding purposes. (Photographed at Urubu, Bahia, by Messrs. Dorsett and Popenoe, February 17, 1914; natural size; P14875FS.)

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

"(No. 150a. Remanso, Bahia, Brazil. February 20, 1914.) Seeds of the *favelleira*, a medium-sized tree with handsome dark-green foliage and spines on the young wood. The seeds are rich in oil and are delicious to the taste, having the flavor of the Brazil nut. Presented by Col. Angelo Camilho, of this place."

37917. IPOMOEA FISTULOSA Martius. Convolvulaceæ.

"(No. 151a. Oliveira, Bahia, Brazil. February 20, 1914.) Seed of a shrub very common along the banks of the Rio Sao Francisco and in low, wet places in this region; height, 10 to 15 feet, tall and slender, branching very little, stems slender and supple, flowers funnelform, 4 inches in diameter, lilac red in color. A very abundant bloomer. Seeds are expelled from the capsules at the slightest disturbance."

37918. SIDA sp. Malvaceæ.

"(No. 152a. Joazeiro, Bahia, Brazil. February 22, 1914.) Small plant 1 to 2 feet high, compact and bushy in form, shrubby at base. The flowers are funnelform, clear light yellow in color, very similar in appearance to *Linum flavum*, but not so deep in color. Might be of value as a greenhouse plant, on account of its dwarf, compact form and profuse blooming."

37919. NEOGLAZIOVIA CONCOLOR C. H. Wright. Bromeliaceæ.

Macambira.

"(No. 153a. Joazeiro, Bahia, Brazil. February 23, 1914.) The *Macambira*, a bromeliaceous plant greatly resembling the pineapple in growth and appearance. It is found growing in great profusion among the rocks on the Ilha do Fogo, in the middle of the Rio Sao Francisco between Joazeiro and Petrolina, whence these seeds were obtained. The flower stalks are 4 to 6 feet high, the flower heads a foot long and 3 inches in diameter, producing seed in the greatest abundance. As far as we can learn, the fiber is not used here, though that of the caroá (*Neoglaziovia variegata*) is employed extensively for the manufacture of cordage."

37920. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

"(No. 154a. Joazeiro, Bahia, Brazil. February 23, 1914.) Seed of the large yellow *melão* commonly sold here and grown in the vicinity of town. A salmon-fleshed melon with smooth, deeply ribbed skin, light yellow in color. The size is large, up to 15 or 20 pounds. The flavor is that of a small muskmelon; the quality very good. For trial in the Southwest, as it seems to be suited to dry lands."

37921. HYPTIS LONGIPES St. Hil. Menthaceæ.

"(No. 155a. Joazeiro, Bahia, Brazil. February 23, 1914.) A trailing plant, common on the Ilha do Fogo, in the middle of the Rio Sao Francisco, between Joazeiro and Petrolina. It flourishes on pure sand and forms a close mat of stems, which suggests that it might be used in the Southwest as a sand-binding plant. Its flowers, borne in heads 1 inch in diameter and 6 inches above the ground, are bright purple in color, very ornamental in appearance."

37922. PSIDIUM sp. Myrtaceæ. **Guava.**

"(No. 156a. Joazeiro, Bahia, Brazil. February 23, 1914.) The *araça mirim*, or small guava, from the Horto Florestal. Fruit about an inch in diameter, yellow in color, thin skinned, the pulp soft, translucent, the

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

seeds abundant. In appearance the plant is similar to *Psidium guajava*. For guava breeding experiments."

37923. ZIZIPHUS JOAZEIRO Mart. Rhamnaceæ. **Jua.**

"(No. 158a. Joazeiro, Bahia, Brazil. February 23, 1914.) Seed of the jua, collected from wild trees on the caatinga near the river 2 miles below town. This interesting and valuable tree is common on the caatingas or dry lands bordering on the Rio Sao Francisco from Joazeiro nearly up to the border of the State of Minas Geraes. Here at Joazeiro it is quite common, but the trees are usually found scattered among the other plants on the caatinga and do not occur in large groves. In places where cattle and horses can get at the trees while young they are kept eaten off almost to the ground, and have a peculiar dwarfed, stunted appearance. When allowed to develop to mature size the tree forms a beautiful, dense green, umbrageous head of foliage 30 feet in diameter. The leaves are somewhat hard and brittle in texture, oval to ovate, about 2 inches in length. The small wood is armed with short, stiff thorns, which are not, however, particularly dangerous. The fruit varies greatly in size, according to the tree by which it is produced. The best fruits are nearly an inch in diameter, creamy yellow in color, spherical or nearly so. Inside the thin skin is a thick layer of mealy flesh, within which lies the seed and the layer of translucent, mucilaginous pulp which surrounds it. The seed is about the size and shape of a small olive stone. The pulp adheres to it very closely and can scarcely be separated even in the mouth. The flavor is peculiar and somewhat insipid. The trees bear prodigiously, the ground under them being covered with fruits at the end of the season. Sheep, cattle, horses, and swine eat the fruit greedily, and it is considered wholesome for them. The principal value of this tree would seem to be as a source of stock feed in dry regions, both the fruits and the foliage being of value for this purpose. In addition, the ornamental value of the tree and its drought-resisting qualities commend it for culture in arid regions. While it is probably not very hardy, it seems likely to be adapted to the Southwest."

37924. INGA AFFINIS DC. Mimosaceæ. **Jatuba.**

"(No. 181a. Joazeiro, Bahia, Brazil. February 24, 1914.) *Jatuba*. A native leguminous tree of slow growth, furnishing lumber extensively used in boat building. The pod in which the seeds are produced contains a soft, sweet pulp which is sometimes eaten."

37925. PHASEOLUS SEMIERECTUS ANGUSTIFOLIUS Martius. Fabaceæ.

"(No. 183a. Joazeiro, Bahia, Brazil. February 24, 1914.) Seed of a brown-flowered leguminous plant 3 to 4 feet high, very slender and with few branches. Common near the river in Horto Florestal. Grows in clay soil near the bank of the Rio Sao Francisco. Flowers deep brown, pealike in form."

37926. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**

"(No. 190a. Bahia, Brazil. March 9, 1914.) Seeds of the *nogueira*, from the small park in the praça of Piedade. According to Dr. Argollo Ferrão, these seeds are eaten by the natives. A rapid-growing tree, which bears heavily in this climate."

37927. BACTRIS CARYOTAEFOLIA Mart. Phœnicaceæ. **Palm.**

"(No. 191a. Bahia, Brazil. March 9, 1914.) Palm seeds sold in the market under the name of *manivelho*. The seed is surrounded by

37872 to 37936—Contd. (Quoted notes by Dorsett and Popenoe.)

a thin layer of subacid pulp of very agreeable flavor. Clusters of fruit are common in the market now."

37928. MIMUSOPS CORIACEA (DC.) Miquel. Sapotaceæ.

"(No. 192a. Bahia, Brazil. March 9, 1914.) A native fruit called *bacopariu* by Dr. Argollo Ferrão, but it certainly is not the true *bacopari* (*Rheedia brasiliensis*). The fruits are round, about 1¼ inches in diameter, yellow in color. The two to five seeds are surrounded by a dry, mealy pulp of sweet, rather mawkish flavor."

37929. POUTERIA CAIMITO (R. and P.) Radlk. Sapotaceæ. **Abíu.**

"(No. 193a. Bahia, Brazil. March 9, 1914.) The *abíu*, a rather rare fruit, but highly esteemed both here and at Rio de Janeiro. In form it is elliptical, 2 to 3 inches long, deep yellow in color. The one to four large, oblong seeds are surrounded by a translucent, whitish pulp very similar in flavor to the *sapote* and fully as agreeable."

37930. ROLLINIA SYLVATICA (St. Hil.) Mart. Annonaceæ. **Araticum.**

"(No. 194a. Bom Fim, Brazil. February 27, 1914.) Seed of an *araticum*. Secured along the railroad right of way about a mile east of town; small shrub or small tree."

37931. SESBAN MACROCARPUM Muhl. Fabaceæ.

"(No. 195a. Bom Fim, Brazil. February 27, 1914.) *Amores casadas.* Ornamental yellow or yellowish brown flowered tree."

37932. SYZYGIUM sp. Myrtaceæ. **Azeitona.**

"(No. 196a. Bom Fim, Brazil. February 27, 1914.) *Azeitona.* Seed from small shrubby tree near town in low, swampy ground."

37933. ANNONA SALZMANNI A. DC. Annonaceæ.

"(No. 202a. Bahia, Brazil. March 11, 1914.) Seed of an *araticum* from Col. Decca's."

37934. COUMA RIGIDA Muell. Arg. **Mucujé.**

"(No. 203a. Bahia, Brazil. March 13, 1914.) *Mucujé.* Seed from fruit purchased in the market. Said to be a large tree."

37935. GENIPA AMERICANA L. Rubiaceæ. **Genipap.**

"(No. 204a. Bahia, Brazil. March 8, 1914.) This fruit is quite common in the market now."

37936. MOQUILEA TOMENTOSA Bentham. Rosaceæ.

"(No. 205a. Rio de Janeiro, Brazil. March 23, 1914.) Seeds of the *oity* tree."

Distribution.—A tree found in the vicinity of Pernambuco in Brazil.

37937 to 37939. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Lausanne, Switzerland. Presented by Prof. G. Martinet, Federal Establishment for Seed Control and Experiments, through Mr. E. Brown, of the Department of Agriculture. Received April 30, 1914. Quoted notes by Prof. Martinet.

37937. "No. 944. *Apitrèfle* (hummelbee clover), a variety which is very productive for three years and can be used two years after being sown. It has the peculiarity of being accessible to honeybees, owing to its short corolla, which is more open at the top. The Director of the Office of Experiment Stations, Dr. A. C. True, last summer in

37937 to 37938—Continued. (Quoted notes by Prof. G. Martinet.)

visiting our establishment saw several bees getting honey from this clover, although he had declared himself to be skeptical before seeing this. As this selection is also one of our best as regards the crop, farmers and beekeepers will find it useful."

37938. "No. 943. This is a perennial clover with numerous fine stocks and many leaves. It develops daughter plants beside the parent stock. This will last for four years and more. The seeds are uniformly yellow, so that it is easy to verify their identity."

37939. "No. 950. Perennial clover higher than the preceding, but not lasting for so long a time. Most of the seeds are dark violet."

37940. Asparagus tenuifolius Lam. Convallariaceæ.

Asparagus.

From Chene, Geneva, Switzerland. Plant presented by Mr. Henri Correvon. Received May 7, 1914.

"This asparagus I found in the Alps of Como, Lombardy." (*Correvon.*)

37941 and 37942. Medicago sativa L. Fabaceæ.

Provence alfalfa.

From Paris, France. Presented by Mr. A. M. Thackara, American consul, who obtained it from Mr. A. Rousset, Paris. Received April 24, 1914. Quoted notes by Mr. Thackara.

37941. "Ordinary Provence alfalfa recleaned against dodder. Mr. Rousset states his belief that this newly harvested seed is desired by the United States Department of Agriculture to distinguish the place of growth in France, but adds that, as he explained to the Chief of the Seed Laboratory, the climate of France is, in his opinion, too even to justify such a theory. He declares that alfalfa seed grown in the Provence district would not, when newly harvested, be any different or contain other varieties of foreign seed than alfalfa grown in other parts of France."

37942. "Extra Provence alfalfa recleaned."

37943. Dioscorea alata L. Dioscoreaceæ. **Yam.**

From Santa Rosa, Fla. Received February 17, 1913, from Mr. William M. Wilson, who obtained them from Dr. E. K. Neal, of the same place. Dr. Neal secured the original material from Mr. J. De Hoff, Arch Creek, Fla. Additional material received from Mr. J. J. Chapman, March 9, 1915.

"The tubers received were rather small and resembled the Jamaica yampee in both form and quality. Judging from these specimens the variety is well worth cultivating in Florida." (*R. A. Young.*)

"I got one seed tuber in 1893, when I first came to Avon Park, De Soto County, Fla., from a neighbor, H. G. Burnett, who had a few in his garden; he got them from his father-in-law, at Fort Myers, where they have been grown, I understand, for 50 years; not in large quantity, however. I have kept seed from year to year since that time, no more, though, than I wanted myself, until year before last, when somehow they made several times more seed tubers than I ever saw before. This last year they again made only a very few seed tubers. I received them under the name of *White Jamaica* yam, but do not know whether

37943—Continued.

this name is correct. Mr. Burnett, who was quite a horticulturist, said their botanical name was *Dioscorea alata*. I grew them for five years near Palatka (at Florahome) and they did well on high hammock land. Down here in Dade County, on very light sandy and rocky land, they produce as much as sweet potatoes, and with me take the place of Irish potatoes; the latter will not succeed in this dry soil at all. The yams keep for months." (*J. De Hoff.*)

37944. PHOEBE NANMU (Oliver) Gamble. Lauraceæ. **Nanmu.**
(*Machilus nanmu* Hemsl.)

From Chungking, China. Presented by the American consul. Received May 1, 1914.

37945 and 37946. COIX spp. Poaceæ. **Job's-tears.**

From the northern Shan States, Burma. Presented by Mr. H. G. Carter, Economic Botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received April 20, 1914. Quoted notes by Mr. Carter.

For detailed information relating to these two varieties, see Sir George Watt's account of Coix published in the Agricultural Ledger No. 13, of 1904.

37945. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf.

"Forma 4. No. 3b195, edible."

37946. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf.

"No. 3b197. Used for bead chains, door screens, and rosaries."

37947. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Raetihi, New Zealand. Purchased of Mr. J. G. Harris. Received April 22, 1914.

"*New Era* potato. The potatoes are lemon colored in the skin and oval in shape; they are shallow in the eyes and will be economical in use. They grow to a large size, and it is no infrequent thing for a whole root to average a pound per tuber. Indeed, a drawback to the propagation of this potato is the remarkably few small potatoes grown. On my land, which is light and lies in the center of the North Island of New Zealand at an elevation of 2,000 feet, I have grown this variety up to 20 tons to the acre. We have frequent summer frosts here on account of the elevation, but these frosts, though they blacken the ordinary varieties of potatoes, do not affect the *New Era*. Indeed, nothing short of a heavy frost will touch it, but it is the blight-resisting qualities of this potato which are chiefly remarkable. Season after season, growing in a field with other kinds on both sides, it has remained unaffected while the various other kinds have been blackened and ruined. I am confident that unless long cultivation lessens the potato's virility the Irish blight will soon be no longer a terror to potato growers." (*Harris.*)

37948 to 37955.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 1, 1914. Cuttings of the following; quoted notes by Mr. Meyer.

37948 to 37952. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From near Tsaochowfu, Shantung, China. Collected March 10, 1914.

37948 to 37955—Continued. (Quoted notes by Mr. F. N. Meyer.)

37948. "(No. 1181. A local variety of persimmon, said to be large, and of elongated, square form, with a constriction running around close to the calyx. Color red; contains few seeds as a rule. Can be dried or kept fresh for a long time, and is considered to be a very good variety. The trees grow to be tall, but have well-formed heads. Chinese name *Ssŭ lêng shih tzŭ*, meaning 'four-squared persimmon.' This and the following varieties are grown on an open plain on sandy loam, and they may possibly be hardier than other varieties. According to Father Petrie, of the Roman Catholic Mission at Tsaochowfu, these persimmons are injured by cold whenever the mercury goes below zero F. The stocks, which are *Diospyros lotus*, never freeze locally, being able to stand severe cold, apparently."

37949. "(No. 1182.) A local variety of persimmon, said to be large, of round form, with rounded-off top. Color yellow, seedless; can be dried or kept fresh for a long time; considered to be a fine variety. The trees are of sturdy growth and are prolific bearers. Chinese name *Pên shih tzŭ*, meaning 'original persimmon.'"

37950. "(No. 1183.) A local variety of persimmon, said to be medium large; of round, pointed form, with a square base. Seedless; can be kept fresh for a long time. Chinese name *Yu lou t'ou shih tzŭ*, meaning 'oil-basket persimmon.'"

37951. "(No. 1184.) A local variety of persimmon, said to be small, of round, flattened shape, with square base. Color yellow; seedless. Is generally eaten pickled in brine. Chinese name *Yen shih tzŭ*, meaning 'salted persimmon.'"

37952. "(No. 1185.) A local variety of persimmon, said to be small, of round, flattened form, with top slightly curved in. Of yellow color; seedless. A very early ripener; good only when fresh. Chinese name *Pa yüeh huang shih tzŭ*, meaning 'eighth moon yellow persimmon.'"

37953. POPULUS TOMENTOSA Carr. Salicaceæ. **Poplar.**

From near Lungkuchi, Shantung, China.

"(No. 1189. March 13, 1914.) The tall-growing North Chinese white poplar, especially recommended as a shade and avenue tree for deep, sandy lands in semiarid regions. See former notes [S. P. I. No. 37542.]"

37954. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl). Schneider. (*Cydonia cathayensis* Hemsl.) Malaceæ. **Quince.**

From Tsaochowfu, Shantung, China.

"(No. 1190. March 11, 1914.) A large-fruited variety of Chinese quince, much grown on the sandy loam around Tsaochowfu."

For previous introductions and descriptions, see S. P. I. Nos. 35458 and 35639.

37955. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

From Tsaochowfu, Shantung, China.

"(No. 1191. March 11, 1914.) A medium large fruited variety of Chinese haw, of beautiful red color, much used preserved and as a jelly. Chinese name *Hung kuo*, meaning 'red fruit.'"

37956 to 37964.

From Victoria (Pittoa, near Garua), Kamerun, German West Africa. Presented by the Agricultural Experiment Station. Received April 15, 1914.

37956 to 37961. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

37956. No. 1. *Kakassirie.*
37957. No. 5. *Baierie bodérie.*
37958. No. 6. *Danérieballoissolodérie.*
37959. No. 7. *Kilburie.*
37960. No. 8. *Deparie danérie.*
37961. No. 9. *Ssanerari.*

37962. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

No. 10. *Jadirie* (*Kolbenhirse*).

37963 and 37964. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

37963. No. 11. *Gaderie.*
37964. No. 12. *Gordori* or *Deparie bodérie.*

37965 to 37972.

From Peru. Presented by Mr. A. Martin Lynch at the request of Dr. Harry V. Harlan, of the Bureau of Plant Industry. Received April 2–3, 1914. Quoted notes by Dr. Harlan.

37965 to 37967. ZEA MAYS L. Poaceæ. **Corn.**

"Purchased in Sicuani (elevation, 11,500 feet), but possibly coming from lower down the valley of the Vilcanote."

37965. "(No. 1. Arequipa, Peru.) Large-grained calico maize."
37966. "(No. 2. Sicuani, Peru.) Large white-grained maize."
37967. "(No. 3. Arequipa, Peru.) Large-grained yellow and mixed maize."

37968. HORDEUM VULGARE L. Poaceæ. **Barley.**

"(No. 5.) Seed purchased in Juliaca (elevation, 12,500 feet); a coarse 6-rowed barley grown for hay as horse feed on the pampas and for grain in some of the protected areas."

37969 and 37970. CHENOPODIUM spp. Chenopodiaceæ.

37969. CHENOPODIUM sp. **Cañagua.**

"(No. 6.) *Cañagua* from Juliaca, Peru. Commonly grown as a cereal crop in elevations as high as 13,500 feet. Is not injured by light freezes at any stage of growth. Not particularly palatable. Might prove useful in high mountain areas, but should be tested under strict control, as it is possible that it might become a weed."

37970. CHENOPODIUM QUINOA Willd. **Quinoa.**

"(No. 7.) *Quinoa* from Juliaca. Only slightly less hardy than *Cañagua.* It is a very palatable cereal and is much less likely to become a weed. Worth testing in areas subject to frosts where wheat and barley are grown with difficulty."

37971. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

"(No. 8.) Wheat purchased in Juliaca but imported probably from the valley of the Vilcanote. Apparently mixed."

37965 to 37972—Continued. (Quoted notes by Dr. H. V. Harlan.)

37972. ZEA MAYS L. Poaceæ. **Corn.**

"(No. 9.) Small-grained yellow maize. Purchased in Juliaca, but imported from Cuzco."

37973 to 37979.

From Chelsea, London, England. Purchased from James Veitch & Sons, Ltd. Plants received April 27, 1914.

37973 and 37974. RHODODENDRON spp. Ericaceæ. **Rhododendron.**

37973. × RHODODENDRON FORSTERIANUM Hort.

"White and fragrant." (*Veitch, Indoor Plants, 1910.*)

Listed by William Watson, Rhododendrons and Azaleas, p. 43, as a hybrid between *R. edgeworthii* and *R. veitchianum.*

37974. × RHODODENDRON FRAGRANTISSIMUM Burb.

"Pure white and very fragrant." (*Veitch, Indoor Plants, 1911.*)

Supposed to be a hybrid between *R. ciliatum* and *R. edgeworthii.*

37975 and 37976. BERBERIS spp. Berberidaceæ. **Barberry.**

37975. BERBERIS STAPFIANA Schneider.

"This species of *Berberis* is very similar to *B. thunbergii,* but the growths are more erect and the leaves are not red tinted. It is a dense, spiny bush with deciduous oblanceolate entire leaves, racemose fascicles of yellow globose flowers, and coral or currant-red berries borne in clusters. It is a native of China." (*Kew Bulletin of Miscellaneous Information, 1913, Appendix III.*)

37976. BERBERIS CORYI Hort.

"This species of *Berberis* is apparently an evergreen, and as an ornamental plant is far superior to either *B. veitchii* or *B. giraldii.* The leaves are in clusters, spatulate and glaucous beneath. The berries, which are also glaucous, are round in shape and currant red in color. It is a native of China." (*Gardeners' Chronicle, 3d ser., vol. 52, p. 321, 1912.*)

37977 to 37979. ROSA spp. Rosaceæ. **Rose.**

37977. ROSA ALBERTI Regel.

"A species with long, graceful shoots clothed with glaucous foliage and bearing ornamental club-shaped coral-red fruits about 1 inch long, which last in good condition for a long time. It is a native of Turkestan." (*Kew Bulletin of Miscellaneous Information, 1912, Appendix III.*)

Distribution.—A white-flowered rose found in the Sungari region of southern Siberia.

37978. ROSA SETIPODA Hemsl. and Wilson.

"A remarkable rose, allied to *R. macrophylla,* with large corymbs of handsome rose-pink flowers. Its long pedicels clothed with spreading, gland-tipped bristles and numerous foliaceous bracts give it a singular appearance. The species is not uncommon in shrubberies in the mountains of the northwestern part of the Province of Hupeh, China." (*E. H. Wilson, in Kew Bulletin, 1916, p. 158.*)

37979. ROSA MOYESII Hemsley and Wilson.

Received as *R. fargesii.*

37980. ALEURITES sp. Euphorbiaceæ. **Tung tree.**

From Chaoyanghsien, Kwangtung, China. Presented by Dr. C. B. Lesher, American Baptist Mission, who secured them through Rev. C. E. Bousfield. Received April 23, 1914.

"Aleurites seeds from about 200 miles in the interior."

37981. PYRUS COMMUNIS L. Malaceæ. **Pear.**

From Newark Valley, New York. Presented by Mr. A. F. Barrott. Received April 28, 1914.

"Scions from a pear tree bearing seedless and coreless fruits. Several years ago I purchased from Green's Nursery Co., Rochester, N. Y., a Bartlett pear tree. The second year after this tree was put out it was broken off level with or just a little below the ground. It sprouted again and grew rapidly. I had been away from my farm about five years; when I returned last year I found a fine pear tree which had over half a bushel of *Seckel* pears on it. We ate and used them all, and did not find a seed or a core in any of them. I have not been able to find out from my former tenants whether or not this seedless and coreless condition has heretofore existed. It seems to me that if this pear will stand propagation without changing its character it would be quite a find." (*Barrott.*)

37982. PYRUS sp. Malaceæ. **Pear.**

From China. Presented by Rev. Hugh W. White, American Presbyterian Mission, Yencheng, Kiangsu, China. Received April 28, 1914.

"*Tangshan.* Unquestionably the finest pear of China. But it is not widely known, because the region of production has heretofore been very secluded, and the fruit does not keep more than one or two months. It is the only Chinese pear that does not have the woody taste and feel, and it has a sweet, juicy flavor. It also grows large, much larger than the ordinary American pear. It grows about 40 miles west of a city called Hsuchowfu, Kiangsu Province. I suppose I am one of the three or four white men that have been in the immediate section where this pear grows. This pear is called the *Tangshan* pear, from Tangshanku, the name of the place that produces it." (*White*, extract from *letter dated March 26, 1912.*)

Cuttings.

37983 to 38041. **Grasses.**

From Brazil. Collected by Messrs. P. H. Dorsett and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes by Messrs. Dorsett and Popenoe.

37983 to 37993.

From Sao Joao del Rey, Minas Geraes, Brazil. Collected January 26, 1914.

37983. MELINIS MINUTIFLORA Beauv. Poaceæ. Capim gordura.

"(No. 78a.) Seeds of *capim gordura* from plants in an old abandoned garden which had been completely overrun with this grass."

37984. PANICUM MAXIMUM Jacq. Poaceæ. Guinea grass.

"(No. 79a.) Seed of a grass growing on top of an old adobe wall at the church Senhor do Bom Fim. Seed heads viscous; in stripping off seed they stick together. In an extremely dry situation."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

37985. ERAGROSTIS BAHIENSIS Schrad. Poaceæ.

"(No. 80a.) Seed of a bunch grass from the top of a hill at the church Senhor do Bom Fim. An open-bunch grass, rather spreading, about 4 to 6 inches high, seed stalks 12 to 18 inches high. Growing on top of a high hill, in very exposed and dry situation; soil almost pure sand. Seeds dull greenish purple in color."

37986. ARISTIDA SANCTAE LUCIAE Trin. Poaceæ.

"(No. 81a.) Seed of a bunch grass from the top of a hill at the church Senhor do Bom Fim. Close bunch grass, bunches about 4 inches in diameter; height of seed stalks about 18 inches; dry soil, almost pure gravel. Open pasture land."

37987. AXONOPUS CHRYSOBLEPHARIS (Lag.) A. Chase. Poaceæ.

"(No. 82a.) Seed of a bunch grass, growing on a hill at the church Senhor do Bom Fim. Growing in very small bunches, height 3 or 4 inches, flower stalks 18 to 20 inches; exposed and very dry location; soil dry and almost pure gravel. Flower heads usually 2 partite, rarely 3 or 4 partite."

37988. ERAGROSTIS ARTICULATA (Schrank) Ness. Poaceæ.

"(No. 83a.) Seed of a grass growing on a hill at the church Senhor do Bom Fim. A low grass, 3 to 4 inches high, flower stalks about 6 inches high, on very dry and exposed situation, soil almost pure gravel."

37989. SPOROBOLUS INDICUS (L.) R. Br. Poaceæ.

"(No. 84a.) Seeds of a grass growing on a hill at the church Senhor do Bom Fim. Bunch grass in clumps 2 to 8 inches or more in diameter; height 6 to 8 inches; flower stalks 18 to 24 inches; on exposed and very dry location, very gravelly soil."

37990. ERAGROSTIS EXPANSA Link. Poaceæ.

"(No. 85a.) Seed of a grass growing on a hill at the church Senhor do Bom Fim. Bunch grass in small clumps, exposed and dry location, soil almost pure gravel."

37991. PANICUM CAMPESTRE Nees. Poaceæ.

"(No. 86a.) Seed of grass growing on a stock range back of the church Senhor do Bom Fim. Bunch grass closely eaten off by cattle in pasture where collected. Height, where not browsed, 8 to 10 inches. Dry pasture land, heavy red clay soil, altitude 1,000 meters."

37992. CHAETOCHLOA IMBERBIS (Poir.) Scribner. Poaceæ.
(*Setaria imberbis* R. and S.)

"(No. 87a.) Seed of a grass from a stock range back of the church Senhor do Bom Fim. Foxtail grass, fairly common on stock ranges, one that the cattle eat. Dry, reddish clay soil."

37993. ANDROPOGON LEUCOSTACHYUS H. B. K. Poaceæ.

"(No. 109a.) Grass seed from a hill near the church Senhor do Bom Fim. Bunch grass, in small clumps, height about 8 to 12 inches, flower stalks 18 to 20 inches, growing in an exposed and dry situation, soil almost pure gravel."

37994 to 37996.

From Pirapora, Minas Geraes, Brazil.

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

37994. CHLORIS POLYDACTYLA (L.) Swartz. Poaceæ.

"(No. 113a. February 8, 1914.) A grass found in the village across the river from here. It grows to a height of about 1½ feet, with seed stalks running up to 3 feet. It seeds profusely, is said to be good, when young, as a pasture grass, and appears to be suitable for hay."

37995. AXONOPUS sp. Poaceæ.

Axonopus sp. prox. *Paspalum marginatus* Trin.

"(No. 116a. February 9, 1914.) Seed of grass growing on campo here. One of the common grasses on the campo. Flower stalks up to 2 to 2½ feet in height. Appears to have been closely grazed by stock."

37996. PASPALUM NOTATUM Fluegge. Poaceæ.

"(No. 120a. February 10, 1914.) Seed of grass collected on the campo about 100 yards from the west bank of the Rio Sao Francisco, where it covers the ground in a solid mat, and makes a good pasture."

37997 to 37999.

From Januaria, Minas Geraes, Brazil.

37997 and 37998. PANICUM spp. Poaceæ.

37997. PANICUM MAXIMUM Jacq. **Guinea grass.**

"(No. 123a. February 14, 1914.) *Capim colonia*, one of the principal forage grasses here, second in importance to *capim bengu*. Seed collected in a field recently planted to this grass. Does not appear to be as widely known as *capim bengu*, but is said to be of very good quality."

37998. PANICUM BARBINODE Trin. **Para grass.**

"(No. 124a. February 14, 1914.) *Capim bengu*, very similar in appearance to *capim de Angola* of Bahia. The most important forage grass here, and preferred above all others. Grows to a height of 7 or 8 feet under favorable conditions and is considered one of the best forages for cattle and horses. Does not seem to be cut very much, the stock being turned in on it to pasture."

37999. DACTYLOCTENIUM AEGYPTIUM (L.) Willd. Poaceæ. (*Eleusine aegyptiaca* Desf.) **Crowfoot grass.**

"(No. 132a. February 15, 1914.) A low grass growing in a pasture back of town. Makes a close sod and propagates by runners."

38000 to 38003.

From Xiquexique, Bahia, Brazil. Collected February 19, 1914.

38000. DACTYLOCTENIUM AEGYPTIUM (L.) Willd. Poaceæ. (*Eleusine aegyptiaca* Desf.) **Crowfoot grass.**

"(No. 142a. Seed of a grass collected on the bank of the Rio Sao Francisco, previously collected at Januaria. It grows very tall on soil that is pure sand."

38001. SYNTHERISMA DIGITATA (Sw.) Hitchc. Poaceæ.

"(No. 143a.) Seed of a grass collected on the bank of the Rio Sao Francisco. Appears to be a large Bermuda grass. Grown on soil which is pure sand."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38002. ERAGROSTIS ACUMINATA Doell. Poaceæ.

"No. 144a.) Seed of a grass collected on the bank of the Rio Sao Francisco from soil that is a pure sand. Looks like a grass collected previously at Sao Joao del Rey."

38003. ANTHEPHORA HERMAPHRODITA (L.) Kuntze. Poaceæ. (*Anthephora elegans* Schreb.)

"(No. 145a.) Seed of a grass with which we are unfamiliar, brought on board by one of the passengers, who had collected it on the sandy bank of the Rio Sao Francisco. The only specimen we had became misplaced."

38004 to 38023.

From Joazeiro, Bahia, Brazil. Collected February 24, 1914.

38004. CHAETOCHLOA SETOSA (Sw.) Scribner. Poaceæ. (*Setaria setosa* Beauv.) **Bitter grass.**

"(No. 160a.) Seed of *capim amargo* (bitter grass) from Horto Florestal. Grows on very poor soil, but is not considered very good for stock."

38005. HOLCUS SORGHUM EFFUSUS (Hack.) Hitchc.

"(No. 161a.) Seed of *capim de boi* from Horto Florestal. When young it is much liked by cattle; when old the stems are rather tough. Not good for hay; height 5 feet; on clay silt soil."

38006. PASPALUM SCUTATUM Nees. Poaceæ.

"(No. 162a.) Grass from Horto Florestal. On clay silt soil."

38007. LEPTOCHLOA FILIFORMIS (Pers.) Beauv. Poaceæ.

"(No. 163a.) Grass from Horto Florestal. Grown on clay silt soil. Probably good."

38008. ANTHEPHORA HERMAPHRODITA (L.) Kuntze. Poaceæ. (*Anthephora elegans* Schreb.)

"(No. 164a.) *Capim espelta* from Horto Florestal. Called by Dr. Zehntner *capim espelta*, and considered by him very good. Grown on clay silt soil."

38009. NAZIA ALIENA (Spreng.) Scribner. Poaceæ.

"(No. 165a. *Capim carapicho de ovelho* from Horto Florestal. Grown on clay silt soil, considered not very good, but grows on poorest soil."

38010. ERAGROSTIS CILIARIS (L.) Link. Poaceæ.

"*Capim barba de bode*, on clay silt soil in Horto Florestal. Not considered of great value."

38011. SPOROBOLUS ARGUTUS (Nees) Kunth. Poaceæ.

"(No. 167a.) Grass grown on clay silt soil in Horto Florestal. Small, not of much value."

38012. ERAGROSTIS ARTICULATA (Schrank) Nees. Poaceæ.

"(No. 168a.) *Capim fino*, on clay silt soil in Horto Florestal. Not considered very good; not sufficient leaf growth."

38013. CHLORIS LEPTANTHA Hitchcock. Poaceæ.

"(No. 169a.) Grown on clay silt soil in Horto Florestal. Name not known. Looks like a very good grass; 3 feet high."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38014. PANICUM HIRTICAULE Presl. Poaceæ.

"(No. 170a. From Horto Florestal. Probably a *capim de passarinho*, grown on clay silt soil."

38015. SYNTHERISMA DIGITATA (Sw.) Hitchcock. Poaceæ.

"(No. 171a.) From Horto Florestal, on dry silt soil."

38016. PASPALUM DENTICULATUM Trinius. Poaceæ.

"(No. 172a.) Grass from Horto Florestal, on clay silt soil; not abundant here."

38017. DACTYLOCTENIUM AEGYPTIUM (L.) Willd. Poaceæ. (*Eleusine aegyptiaca* Desf.) Crowfoot grass.

"(No. 173a.) *Capim pe de gallinha* or *pe de periquito*, on clay silt soil in Horto Florestal. Not considered to have much value. Resists drought well; not abundant here."

38018. PANICUM HIRTICAULE Presl. Poaceæ.

"(No. 174a.) *Capim de passarinho*, a very good grass, on clay silt soil, in Horto Florestal."

38019 and 38020. ERIOCHLOA POLYSTACHYA H. B. K. Poaceæ.

38019. "(No. 175a.) On clay silt soil in Horto Florestal. Not abundant here."

38020. "(No. 176a.) On clay silt soil in Horto Florestal. Of very good quality; better for hay than pasture. Seems to prefer clay soil."

38021. TRICHOLAENA ROSEA Nees. Poaceæ. Favorita grass. (*Panicum teneriffae* R. Br.)

"(No. 177a.) *Capim favorita*, believed to be native, but now planted in Minas Geraes, Sao Paulo, and elsewhere. Considered a very good grass; used for hay in Sao Paulo.

For an illustration of favorita grass as grown in Brazil, see Plate VII.

38022. ERIOCHLOA PUNCTATA (L.) Hamilton. Poaceæ.

"(No. 179a.) Height about 4 feet, on clay silt soil near river bank in Horto Florestal. Good forage for stock."

38023. CHLORIS ELEGANS H. B. K. Poaceæ. Caatingueiro grass.

"(No. 180a.) *Capim caatingueiro*, believed by Dr. Leo Zehntner to be one of the best grasses here. Has come into flower three weeks after cutting. On clay silt soil in Horto Florestal."

For an illustration of caatingueiro grass as grown in Brazil, see Plate VIII.

38024 to 38027.

From Bom Fim, Bahia, Brazil. Collected February 26, 1914.

38024. PANICUM MAXIMUM Jacq. Poaceæ. Guinea grass.

"(No. 184a.) *Capim guiné* (guinea grass), or, as it is sometimes called, *capim assú* (big grass). Commonly cultivated here, there being a number of small plantations 1 to 3 acres in extent. Planted about 4 by 4 feet, grows 6 to 10 feet high. Said to be fine for cattle but rather too fattening for horses."

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38025. VALOTA INSULARIS (Elmg.) Chase. Poaceæ. **Sour-grass.**

"(No. 186a.) A grass collected on a hillside in the outer edge of town. It is rather abundant in this region and may have value as a hay grass. It grows rather luxuriantly, reaching a height of 5 feet or even 6."

38026 and 38027. CHAETOCHLOA spp. Poaceæ.

38026. CHAETOCHLOA LACHNEA (Nees) Hitchcock. **Foxtail grass.**

"(No. 187a.) A foxtail grass, growing on the hillside at the edge of town. Does not seem to be of any particular value. Grows 2 to 2½ feet high.

38027. CHAETOCHLOA CAUDATA (Lam.) Scribner.

"(No. 188a.) A grass about 3 feet high, growing abundantly on the hillsides around town. The soil is stiff clay, and the climate here is very dry for a large part of the year."

38028. PASPALUM ATTENUATUM Presl. Poaceæ.

En route from Bom Fim to Bahia, Brazil. Collected February 28, 1914.

"(No. 198a.) Collected between Agua Fria and Entroncamento, 45 kilometers above Alagoinhas. Very common on rolling dry uplands."

38029. CHLORIS VIRGATA Swartz. Poaceæ.

From Serrinha, Brazil. Collected February 28, 1914.

"(No. 199a.) Secured at Serrinha."

38030. PANICUM MAXIMUM Jacq. Poaceæ. **Guinea grass.**

From Bom Fim, Bahia, Brazil. Collected February 26, 1914.

"(No. 200a.) *Capim guiné* (guinea grass), or, as it is sometimes called, *capim assú* (big grass). Commonly cultivated here, there being a number of small plantations 1 to 3 acres in extent. Planted about 4 by 4 feet, grows 6 to 10 feet high. Said to be fine for cattle but rather too fattening for horses."

38031. PASPALUM CONJUGATUM Berg. Poaceæ.

From Ramona, Bahia, Brazil. Collected March 11, 1914.

"(No. 201a.) Seed of what appears to be and is reported to be a very good pasture grass. When pastured close it makes a good sod; likes low situations."

38032 to 38039.

From Rio de Janeiro, Brazil. Purchased from Eickhoff, Carneiro Leão & Co.

38032 to 38034. HOLCUS spp. Poaceæ.

38032. HOLCUS HALEPENSIS L. **Sudan grass.**
(*Sorghum halepense* Pers.)

"(No. 207a. March 23, 1914.)"

38033 and 38034. HOLCUS SORGHUM L. **Sorghum.**
(*Sorghum vulgare* Pers.)

38033. "(No. 210a.)"

38034. "(No. 211a. March 23, 1914.)"

TRIAL PLAT OF FAVORITA GRASS (TRICHOLAENA ROSEA NEES), S. P. I. NO. 38021, AT THE HORTO FLORESTAL, AN EXPERIMENT STATION AT JOAZEIRO, BAHIA, ON THE BANKS OF THE RIO SAO FRANCISCO.

This handsome grass with rose-colored flower heads, as indicated by the name, under favorable conditions grows to a height of 2 or more feet. It is planted to a limited extent in some parts of the State of Bahia, and also, it is said, in parts of the State of Sao Paulo. Its principal use is as green forage. (Photographed by Messrs. Dorsett and Popenoe, February 24, 1914; P14946FS.)

A FIELD OF CAATINGUEIRO GRASS (CHLORIS ELEGANS H. B. K.), S. P. I. No. 38023.

This dry-land grass has been planted experimentally in the Horto Florestal at Joazeiro, State of Bahia, Brazil. It resists the severe climate of this region and produces a fairly good yield. Live stock are said to prefer it to many other grasses grown in Brazil. Mr. Dorsett is shown collecting seeds of this number. (Photographed by Wilson Popenoe, February 24, 1914; P14944FS.)

37983 to 38041—Contd. (Quoted notes by Dorsett and Popenoe.)

38035. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ. (*Cynodon dactylon* Pers.) **Bermuda grass.**

"(No. 212a. March 23, 1914.)"

38036. ARRHENATHERUM ELATIUS (L.) Beauv. Poaceæ. **Oat-grass.**

"(No. 213a. March 24, 1914.)"

38037. CYMBOPOGON RUFUS (Nees) Rendle. Poaceæ. (*Andropogon rufus* Kunth.)

"(No. 214a. March 24, 1914.) *Capim jaragua.*"

38038. MELINIS MINUTIFLORA Beauv. Poaceæ. **Molasses grass.**

"(No. 215a. March 23, 1914.) *Capim gordura roxo.*"

38039. PANICUM BULBOSUM H. B. K. Poaceæ. **Guinea grass.**

" (No. 216a.) *Capim guiné*, or guinea grass."

38040 and 38041.

From Bahia, Brazil. Collected March 19, 1914.

38040. HOMOLEPIS ISOCALYCINA (Meyer) Chase. Poaceæ. (*Panicum isocalycinum* Meyer.)

"(No. 221a.) Seed from grass growing in clay on a hillside in a small pasture near the 'Centro Agricola' Experiment Station near Bahia. Grass roots at joints."

38041. PANICUM LAXUM Swartz. Poaceæ.

"(No. 222a.) Seed from grass growing in clay soil on a hillside in a small pasture near the 'Centro Agricola' Experiment Station near Bahia. This appears to be a bunch grass; soil dry; exposed situation."

38042 and 38043. CINCHONA spp. Rubiaceæ.

From Kalimpong, Bengal, India. Presented by Mr. Henry F. Green, manager, Government Cinchona Plantations, at the request of the superintendent of cinchona cultivation in Bengal. Received May 2, 1914.

38042. CINCHONA OFFICINALIS L. **Cinchona.**

"The loxa or crown bark, the pale bark of commerce. This is a native of Ecuador and Peru and with *C. succirubra* was the species assigned by Markham to his colleague, Spruce, to discover. It is grown at high elevations (above 7,000 feet) in the Nilgiris, Ceylon, and Sikkim, but not extensively. It is a weak, straggling tree, attaining at most only 20 feet in height. Its cultivation in Sikkim has, however, been almost abandoned, owing to the climate being too moist, but it is perhaps the most important of the species grown in the Nilgiri Hills." (*Watt, Commercial Products of India.*)

38043. CINCHONA SUCCIRUBRA Pavon. **Cinchona.**

"The red bark is largely cultivated on the hills of South India at altitudes of 4,500 to 6,000 feet; at higher altitudes the growth is too small to make its cultivation profitable. On the hills east of Toungoo in Burma and in some parts of the Satpura Range of Central India it is grown, and also met with in the Government plantations of Sikkim, but it is not popular, and is rapidly being replaced by *C. calisaya* var. *ledgeriana*.

38042 and 38043—Continued.

It is a hardy plant with a bold, sturdy stem. In rich and sheltered situations it grows to a height of 50 feet or more. The leaves are bright apple green in color, the plantation in consequence looking light and bright, while one of *C. officinalis* looks dark and gloomy." (*Watt, Commercial Products of India.*)

38044. ORYZA SATIVA L. Poaceæ. **Rice.**

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell, through Mr. W. R. Lamberth, Oakdale, Cal. Received May 6, 1914.

"Seed of the African hill rice. This rice is raised here on the hillsides, where it can get no water, except that which rains on it.

"I had thought of its being used at home in this way. In Louisiana, where I used to live, we have what are known as the 'pimple prairies,' and where these pimples or mounds occur in the rice fields, it causes not only that much land to be wasted but often weeds grow on them, the seeds of which are very hard to remove from the rice. I thought that perhaps if these mounds were planted with this hill rice that this trouble could be avoided." (*Stockwell.*)

38045. VICIA FABA L. Fabaceæ. **Broad bean.**

From Algiers, Algeria. Presented by the American consul. Received May 1, 1914.

38046. VIGNA NILOTICA (Delile) Hook. f. Fabaceæ.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Public Works, Department of Agriculture, Horticultural division, through Prof. S. C. Mason, of the Department of Agriculture. Received May 1, 1914.

"In Muschler's Flora it is stated that this grows in the Delta, but I have seen it only in Aswan and Nubia. This seed was grown at Gizeh. It is of much less value than the common variety of *Vigna sinensis*, commonly cultivated throughout the country." (*Brown.*)

38047. CEIBA ACUMINATA (S. Wats.) Rose. Bombacaceæ.
(*Eriodendron acuminatum* S. Wats.) **Mexican cotton tree.**

From Tlatlaya, State of Mexico. Presented by Mr. William Brockway. Received April 25, 1914.

"Mexican cotton tree (*pochota*). Collected near Tlatlaya, April 6, 1914." (*Brockway.*)

38048. SALVIA sp. Menthaceæ. **Chia.**

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Prof. C. A. Purpus. Received May 6, 1914.

"The seeds are put into water, where they swell up and soften and are used as a drink, mixed with sugar and red wine. *Chia* was used by the Aztecs in olden times to make a drink, mixed with corn (maize)." (*Purpus.*)

38049 to 38052.

From Epsom, Auckland, New Zealand. Presented by Mr. D. Petrie. Received April 21, 1914.

38049 to 38052—Continued.

38049. GAYA LYALLII (Hook. f.) Baker. Malvaceæ.
(*Plagianthus lyallii* Hook f.) **Large-flowered ribbonwood.**

"A very fine small tree of the order Malvaceæ, with fine clusters of cherrylike flowers, and it is hardy here." (*Petrie.*)

"A beautiful shrub, found only in the mountainous districts of the South Island. This is one of the very few New Zealand trees which shed their leaves in the winter and show autumnal tints. The leaves are clothed with stellate hairs, and are deeply notched. This plant is one of the many surprises of the New Zealand forest. The traveler, who sees for the first time its cherrylike blossoms amidst the greenery of the bush, usually regards it as an escape from some garden. Its soft, tender, deciduous leaves are in strong contrast to the normal, hard, glossy leaf of the typical trees of the New Zealand forest, whilst its flowers are equally different from the typical, minute, greenish clusters of Nothopanax, etc." (*Laing and Blackwell, Plants of New Zealand.*)

38050. FUCHSIA PROCUMBENS R. Cunningh. Onagraceæ. **Fuchsia.**

"A spreading slender shrub with sweet flowers. Good for rockery if climate is mild." (*Petrie.*)

"A slender, prostrate plant 6 to 18 inches long. Leaves ovate or cordate, one-fourth to one-half an inch long. Flowers one-half to three-fourths inch long, solitary, axillary, erect. Petals none. Berry shining, pale red. In sandy or rocky places. It lacks the graceful, pendulous flower stalks which enhance so much the beauty of the cultivated forms, but it is a very dainty little species. The sharp contrast between the beautiful waxy yellow of the calyx and the intense pure blue of the pollen would make it noticeable anywhere. Any other color but yellow is rare in pollen, and such a bright blue as this has probably some definite though unknown significance. It is of the same color in the two other New Zealand species. It is also extremely viscid. This no doubt enables it to cling readily to any insect which may enter the flower. The viscidity is due to the development by the pollen grains of structureless drops of a glutinous fluid that very readily draws out into long fine threads. In each of the three New Zealand species of Fuchsia there are three forms of flower, and in some cases, also, intermediate forms. In *F. procumbens* there is a long-, short-, and mid-styled form, but the stamens are of the same length in each case." (Adapted from *Laing and Blackwell, Plants of New Zealand.*)

38051. METROSIDEROS DIFFUSA Smith. Myrtaceæ.

"A fine low-branching shrub, crimson flowers. North Island, New Zealand." (*Petrie.*)

38052. PITTOSPORUM EUGENIOIDES Cunningh. Pittosporaceæ. **Tarata.**

"South and North Islands, New Zealand." (*Petrie.*)

"A tree sometimes 40 feet in height, glabrous, with large corymbs of fragrant flowers of a greenish yellow hue. Leaves 2 to 3 inches long, broadly oblong, usually waved at the margins. Bark white. Capsules 2 to 3 valved. A beautiful tree whose pale-green leaves with undulating margins emit, when bruised, a lemonlike odor. The delicate venation and light-colored, almost white, midrib add to the beauty of the leaf. The Maoris mixed the resinous exudation from the bark with the juice of the sow thistle and worked it into a ball, which they chewed. In October the tree produces masses of yellowish green flowers, whose heavy

38049 to 38052—Continued.

honied odor is almost sickening in its intensity. According to Mr. G. M. Thomson, the plant is probably often self-pollinated; but Mr. Kirk points out, in his Forest Flora, that though stamens and pistils are always present, one or the other is often abortive, so that the flowers are often practically unisexual. The wood of this species, like that of the other species of the genus, is almost worthless. The tree is often cultivated for its beauty, and is sometimes—though not so often as *P. tenuifolium*—used to form an ornamental hedge." (*Laing and Blackwell, Plants of New Zealand.*)

38053. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From San Giovanni a Teduccio, Italy. Purchased from Dammann & Co. Received January 30, 1914.

"*Durra.*"

38054 and 38055. RUBUS BOGOTENSIS H. B. K. Rosaceæ. **Blackberry.**

From Bogota, Colombia. Procured by Mr. F. L. Rockwood, clerk, American Legation, at the suggestion of Mr. Frank M. Chapman, curator, American Museum of Natural History. Received May 6, 1915.

Rooted plants; quoted notes by Mr. Chapman.

38054. "A remarkable blackberry which we found growing near a roadside posada, called El Pinyon, on the road between Bogota and Fusagasuga. El Pinyon, with an altitude of 9,600 feet, is in the Temperate Zone, with an average annual temperature of probably about 60°. The warm air from the Magdalena Valley at this point draws up through a cut in the mountains and is condensed as it reaches El Pinyon, at which place the descent to Fusagasuga begins; the result is a cold, perpetually moist climate, such as I imagine we should find it very difficult to duplicate in the United States, and for this reason it might be hard to introduce the berry into this country. As for the berry itself, I, unfortunately, can tell you very little about it except in regard to its size and flavor. We did not, I am sorry to say, even make measurements of the berries, and I have therefore found great difficulty in making my friends believe my stories of its size. From memory, however, I should say that its length was between 3½ and 4 inches, its breadth between 2 and 2½ inches, and its height between 2 and 3 inches. The flavor was most delicious, and suggested in part that of the blackberry of the subtropical zone of the Andes, known as *El Moral de Castile*, and to some extent that of the raspberry. The berries grew in small clusters of three or four, and not many appeared to be on one bush. The bushes, as I remember, were rather tall and scraggly, but they were placed with other vegetation, and I gained no clear idea of their form. They were not abundant."

38055. "*El Moral de Castile.* This berry, which appears to grow wild, attains a size and shape comparable to that of our best cultivated varieties, and to my mind has a better flavor than any of them. It may be found in abundance in the subtropical zone at an elevation of 6,000 to 8,000 feet; or, to be more definite, at a posada about one hour below El Pinyon, toward Fusagasuga, known as El Roble. Here, too,

38054 and 38055—Contd. (Quoted notes by Mr. F. M. Chapman.)

the rainfall is high, for the entire Temperate Zone is included in the area of condensation. We worked at these localities during the first part of April, when the blackberry crop had not reached full maturity. I should say that, provided similar conditions prevail in other years, April 15 would be about the proper time to find the plants in fruit."

38056. PELARGONIUM ODORATISSIMUM (L.) Soland. Geraniaceæ. **Rose geranium.**

From Nice, France. Presented by the American consul. Received May 5, 1915.

"From Pegomas, the center of the geranium-plant industry in this district. The vice consul was informed by the principal growers of geranium that only one variety is used in the perfume industry, the botanical name being *Pelargonium odoratissimum*, and that the cuttings are taken at the end of October or at the beginning of November, and must be very carefully handled during the winter months, and especially protected against cold and frost, which necessitates careful attention." (Extract from report by *William Dulany Hunter, American consul, Apr. 23, 1914.*)

38057 to 38062. HORDEUM spp. Poaceæ. **Barley.**

From Zurich, Switzerland. Presented by Prof. Dr. Albert Volkart, Swiss Seed Experiment Station, through Mr. David F. Wilber, American consul. Received March 23, 1914. Quoted notes by Dr. Volkart.

38057. HORDEUM VULGARE COERULESCENS Seringe.

"Four-rowed winter barley (unimproved domestic variety) from Riniken, Canton Aargau."

38058. HORDEUM VULGARE L.

"*Argovia* (4-rowed winter barley, pure bred from domestic barley). From the Agricultural School at Brugg, Canton Aargau."

38059 and 38060. HORDEUM DISTICHON NUTANS Schubl.

38059. "Two-rowed spring barley (unimproved domestic variety) from Adlikon bei Andelfingen, Canton of Zurich."

38060. "Adliker barley (2-rowed, pure bred from a single domestic variety) from Jb. Ohninger, Adlikon."

38061 and 38062. HORDEUM VULGARE L.

38061. "Four-rowed spring barley (unimproved domestic variety) from Vorrenwald Eich, Canton Lucerne."

38062. "Six-rowed spring barley (unimproved domestic variety) from Pfyn, Canton Thurgau."

38063 to 38084. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Berlin, Germany. Presented by the Botanic Garden. Cuttings received May 6, 1914.

38063. OPUNTIA ALBICANS Salm-Dyck.

38064. OPUNTIA ANACANTHA Speg.

38065. OPUNTIA CANDELABRIFORMIS Mart.

38066. OPUNTIA CHRYSACANTHA Hort.

38067. OPUNTIA CONSOLEANA Hort.

38063 to 38084—Continued.

38068. OPUNTIA CURASSAVICA Mill.

38069. OPUNTIA ELATA DELAETIANA Weber.

38070. OPUNTIA sp.

38071. OPUNTIA ELATA Salm-Dyck.

38072. OPUNTIA ELONGATA (Willd.) Haworth.

38073. OPUNTIA GLAUCESCENS Salm-Dyck.

38074. OPUNTIA GLAUCOPHYLLA Wendl.

38075. OPUNTIA GLOMERATA Haw.

38076. OPUNTIA KLEINIAE P. DC.

38077. OPUNTIA LANCEOLATA Haw.

38078. OPUNTIA LEMAIREANA Console.

38079. OPUNTIA MICROCARPA Engelm.

38080. OPUNTIA PARAGUAYENSIS K. Schumann.

38081. OPUNTIA SPEGAZZINII Web.

38082. OPUNTIA SULPHUREA Gillies.

38083. OPUNTIA MIECKLEYI K. Schumann.

38084. OPUNTIA VULPINA Web.

No. 38070 was received as *Opuntia diacantha*, the name of which is not found to have been published.

38085 to 38087. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

From Sapporo, Japan. Presented by Mr. T. Minami, Professor of Agronomy, College of Agriculture, Tohoku Imperial University, at the request of Dr. R. Shoji. Received May 6, 1914. Quoted notes by Mr. Minami.

38085. "No. 1. Sorghum (so-called sorghum *Janome*) produced in Hokkaido in 1912."

38086. "No. 2. Sorghum (common) produced in Hokkaido in 1912."

38087. "No. 3. Sorghum (common) produced in Honshu (the mainland of Japan) in 1913."

38088 to 38093. ORYZA SATIVA L. Poaceæ. Rice.

From Southern Circle, Burma, India. Presented by Mr. A. McKerral, Deputy Director of Agriculture. Received May 4, 1914.

38088. *Ngasein paddy.* No. 1.

38089. *Baw yoot.* No. 2.

38090. *Nga-cheik-gale.* No. 3.

38091. *Bau-gauk.* No. 4.

38092. *Java paddy.* No. 5.

38093. *Saba-net-Taungbya.* No. 6.

38094 and 38095. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.

(*Prunus persica* Stokes.)

From Arequipa, Peru. Presented by Mr. Leon Campbell, Superintendent of the Observatorio. Received May 2, 1914. Quoted notes by Mr. Campbell.

38094. "Peach seeds gathered in Arequipa market February 15 to March 20, 1914."

38095. "A distinct class, known here as *Uvillas*. Collected near the Observatorio, March, 1914."

38096 to 38099.

From Queensland, Australia. Presented by Mr. J. A. Hamilton, Tolga, via Cairns, Queensland, Australia. Received April 29, 1914. Quoted notes by Mr. Hamilton, except as otherwise stated.

38096. BACKHOUSIA BANCROFTII Bailey and Muell. Myrtaceæ.

"Seed of a giant hardwood, one of our best; likes a fairly wet climate; grows 5 to 6 feet in diameter."

"Wood of a light-gray color, hard, close grained, something like teak, useful as a building timber; rather dark toward the center in large trees; splits straight and freely." (*Bailey. In Maiden, Useful Native Plants of Australia.*)

38097. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

"A large-fruited passion fruit."

38098. TRISTANIA SUAVEOLENS (Soland.) Smith. Myrtaceæ.

"A common tree here; makes a fair shade tree."

"Timber used for buggy and coach frames, tool handles, mallets, cogs of wheels, posts, etc. It is remarkably strong and elastic, tough, close grained, and durable, but it is liable to rend in seasoning. 'It is of a red color, resembling Spanish mahogany. It is extensively used for piles, as it is found to resist the ravages of the teredo longer than any other wood as yet tried in the colony.' (*Catalogue, Queensland Woods, Colonial Exhibition, 1886.*)" (*Maiden, Useful Native Plants of Australia.*)

38099. MAXIMILIANEA sp. Cochlospermaceæ.
(*Cochlospermum* sp.)

38100 to 38104.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received April 29–30, 1914.

38100. ABROMA AUGUSTA L. f. Sterculiaceæ.

"It is found in various parts of India, growing to be a small tree. Flowers most profusely during the rains, and ripens seed during the cold season. The bark abounds with strong white fibers, which make a very good substitute for hemp; and as the plant grows so quickly as to yield two, three, or even four crops of cuttings within the year fit for peeling, etc., it may be advantageously cultivated (in India) for its fibers which, though not so strong as hemp, make a good common cordage. The top leaves of this stately vegetable are oblongly cordate, nearly twice longer than broad, scarcely angular or scalloped, and have short stalks, the lower ones are oblately cordate, nearly round in the circumference, cut into 5 to 7 pointed lobes, and have long stalks. The corolla is nodding, and the petals converge." (*Botanical Register, pl. 518, 1821.*)

38101 and 38102. CITRUS spp. Rutaceæ.

38101. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. **Mandarin.**

"Seeds of a small, oblate, very thin-skinned mandarin of most excellent quality, that is imported from China in considerable quantities. It is to my mind greatly superior to all the mandarins I have eaten here or in Florida, with possibly the exception of the *Oneco*, which it very much resembles in flavor. Considering how well the

38100 to 38104—Continued.

mandarin reproduces itself from seed, at least a few seedlings of excellent quality ought to be obtained from these seeds." (*Wester.*)

38102. CITRUS sp. **Lime.**

38103. TALAUMA sp. Magnoliaceæ.

"A very ornamental tree in the Philippines. This species in all probability is too tender for the mainland of the United States." (*Wester.*)

38104. MUSSAENDA PHILIPPICA A. Richard. Rubiaceæ.

"A very ornamental tree in the Philippines. This species in all probability is too tender for the mainland of the United States." (*Wester.*)

"A shrub or small tree 3 to 5 meters high, more or less pubescent or nearly glabrous. Leaves oblong ovate to oblong lanceolate, acuminate, 6 to 14 cm. long, base acute; stipules about 4 mm. long, 2-fid. Cymes terminal, rather open, pubescent, few flowered. Calyx about 7 mm. long, four of the teeth as long as the tube, one very much enlarged as a white, leaflike, long-petioled, elliptic-ovate appendage, the lamina 4 to 8 cm. long. Corolla yellow, pubescent, about 2 cm. long, enlarged upward. Fruit about 1.5 cm. long. Common and widely distributed in the Philippines, variable. Perhaps only the Philippine representative of the Indo-Malayan *Mussaenda frondosa* L." (*Merrill, Flora of Manila.*)

38105 to 38110.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received May 4, 1914. Notes by Mr. Bircher.

38105. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"From Rhodesia. A watermelon with greenish flesh of poor taste, but a good keeper, which can be stored away for six months or more; it may be valuable for hybridization purposes."

38106 and 38107. HIBISCUS spp. Malvaceæ.

38106. HIBISCUS PHYSALOIDES Guill. and Perr.

"From the Kongo. The leaves are cooked like spinach; the taste slightly acid."

Distribution.—A tall herb or under shrub with cordate 5-lobed leaves and purple flowers, found in the Senegal region of Upper Guinea, in the Mozambique district, and in the vicinity of Durban, Africa.

38107. HIBISCUS SABDARIFFA L. **Roselle.**

38108. HOLCUS HALEPENSIS L. Poaceæ. **Sudan grass.**
(*Sorghum halepense* Pers.)

"A fodder grass growing spontaneously in Egypt."

38109. PHYSALIS CURASSAVICA L. Solanaceæ.

"Berries edible in cooked state."

38110. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"Var. *Mammoth*, of gigantic growth."

38111. ZEPHYRANTHES sp. Amaryllidaceæ.

From Bom Fim, Bahia, Brazil. Collected by Messrs. Dorsett, Shamel, and Popenoe, of the Bureau of Plant Industry. Received April 13, 1914.

"(No. 75. February 27, 1914.) A beautiful bright pink amaryllislike flower, found in a field of *Capim favorita.*" (*Dorsett, Shamel, and Popenoe.*)

38112. SEAFORTHIA ELEGANS R. Brown. Phœnicaceæ. **Palm.**
(*Ptychosperma elegans* Blume.)

From Belize Botanical Station, British Honduras. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 8, 1914.

"Said to grow wild in the Stann Creek district, south of Belize, but a native of northern Australia. A slender, graceful palm, reaching 30 feet in height, growing in the garden of the British consul at Livingston. Large-fruited form. This appears to be the genuine *Ptychosperma elegans*, originally described as *Seaforthia elegans*. The palm that is commonly planted in California under the name *Seaforthia elegans* does not represent this species, but has been described recently as the type of a new genus, under the name *Loroma amethystina*." (*Cook.*)

38113. CUCUMIS ANGURIA L. Cucurbitaceæ.

From Joazeiro, Brazil. Collected by Messrs. Dorsett, Shamel, and Popenoe, of the Bureau of Plant Industry. Received April 13, 1914.

"(No. 197a. February 23, 1914.) *Maxixe.* Seed of a small, spiny, oval, green fruit used extensively as a vegetable in the interior." (*Dorsett, Shamel, and Popenoe.*)

"An annual plant, native of South America, where the fruit is eaten; much branched, creeping; stems slender, reaching a length of 2 to 3 meters, coarsely hairy and with simple tendrils; leaves divided into 5 to 7 rounded, very slightly dentate leaves; flowers yellow, very small, numerous. Fruit oval, green, striped lengthwise with whitish bands, and becoming pale yellow at maturity. It is entirely covered with fleshy, pointed or bent protuberances, simulating true spines; the fruit attains at maturity a length of 5 cm., with a diameter of 3 to 4 cm. The peduncle is very nearly twice the length of the fruit, the interior of which is entirely filled with the seeds. The flesh itself is far from abundant; it is white, solid, and has a very agreeable cucumber taste, without any bitterness. In the colonies they eat the fruit of this Antillean cucumber cooked or preserved in vinegar." (*Vilmorin-Andrieux & Cie., Plantes Potageres, p. 197–198.*)

38114 and 38115. RUBUS BOGOTENSIS H. B. K. Rosaceæ. **Blackberry.**

From Bogota, Colombia. Procured by Mr. F. L. Rockwood, clerk, American Legation. Received May 7, 1914.

38114. "Seeds of an extra large blackberry from Fusagasuga." (*Rockwood.*)

38115. "Big blackberry from Facatativa, Colombia." (*Rockwood.*)

See S. P. I. Nos. 38054 and 38055 for previous introductions and description.

38116. (Undetermined.)

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received May 6, 1914.

38117 to 38135.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received April 28, 1914. Quoted notes by Commander Stearns, except as otherwise indicated.

38117 to 38135—Contd. (Quoted notes by Commander Stearns.)

38117. ADENANTHERA PAVONINA L. Mimosaceæ. **Coral-bean tree.**

"*Lopa.* Has red berries that are used for necklaces."

For previous introduction, see S. P. I. No. 36866.

"*La Aulopa.* A handsome deciduous tree. The heart of the wood (of the larger trees) is a deep-red color. It is hard and durable and in India is used at times as a substitute for red sandalwood. Yields a dye."

38118. CALOPHYLLUM INOPHYLLUM L. Clusiaceæ. **Mast wood.**

"A valuable tree; grows tall, with heavy trunk; the wood cuts nearly white but grows red as exposed; it is hard, curly, and heavy, suited to cabinetwork on account of its beautiful red color. Canoes are made of this wood, and it is much used for general purposes. The oil extracted from the seeds is used as a medicine for eye diseases. In southern Polynesia the green, fragrant oil from the nut is used for lamps and as an external remedy for bruises and rheumatism. The resin from the trunk is one of the tacamahac gums of commerce; it is agreeably aromatic (in Tahiti it is used as a scent), yellowish green in color, and soluble in alcohol."

38119. CANNA INDICA L. Cannaceæ. **Canna.**

"*Fagamanu.*"

"*Fanamanu.* In India the seeds are sometimes used for shot, and are made into necklaces and other ornaments; they yield a purple dye, but it is not very permanent. Starch may be obtained from this, but not so good as that from another variety."

38120. CASSIA sp. Cæsalpiniaceæ.

"*Lauvai matui.*"

38121. CAPSICUM FRUTESCENS L. Solanaceæ. **Red pepper.**

"*Polo.* Bush, small Chile pepper."

38122. CORDIA SUBCORDATA Lam. Boraginaceæ.

"Very light wood; serves for floats for fish nets. The berries are used as paste for native cloth. The wood is rather soft, but it is durable and of a rich walnut color; it is much prized in Hawaii, where it is used for cups and poi calibashes. When polished, the wood shows wavy bands of light and dark."

Distribution.—Southeastern Asia and Madagascar and eastward through the Malayan Archipelago to Australia and Hawaii.

38123. CASSIA OCCIDENTALIS L. Cæsalpiniaceæ.

"*Fuefuesina.* A small creeper. The leaves are used by natives as a liniment, and were used in olden times to drive evil spirits from the body."

38124. DYSOXYLUM MAOTA Reinecke. Meliaceæ.

"*Maota.* A short, heavy tree with dense foliage; wood is light colored, straight grained, not durable. It is the favorite tree of the wild pigeon, which eats its fruit."

38125 and 38126. GYNOPOGON spp. Apocynaceæ.

38125. GYNOPOGON sp.

"*Ma Ali.* A large tree, very abundant; wood light slate color, coarse grained, but straight, dry, and light; quite hard; the odoriferous gum is much used by the natives."

38117 to 38135—Contd. (Quoted notes by Commander Stearns.)

38126. GYNOPOGON BRACTEOLOSA (Rich.) Schumann. Gau.
(*Alyxia bracteolosa* Rich.)

"*Gau.* A shrub used in making 'ula.'"

38127. HERNANDIA PELTATA Meissner. Hernandiaceæ.

"*Pua.* The wood is very soft and light and takes fire readily from a flint and steel. It has been used in Guam for making canoes, but they soon become water-logged and useless if unpainted and left exposed to the weather. The bark, seeds, and young leaves are slightly purgative, and the juice of the leaves is a depilatory, destroying hair without pain. Distributed in tropical Asia, Africa, and Australia, and eastward in the Pacific as far as Tahiti. The Samoan name signifies 'iris' (of the eye) and is given because of the fruit, which is inclosed in an inflated, globular involucel, having a circular orifice." (*Safford, Useful Plants of Guam.*)

38128. SANTALUM sp. Santalaceæ. Asi.

"*Asi.* A kind of sandalwood. Wood used for building purposes."

38129. MACARANGA TANARIUS (Stickman) Muell. Arg. Euphorbiaceæ.

"*Pata.* A very large tree of the forest; the wood, however, is of no value, decaying rapidly."

38130 and 38131. VITEX TRIFOLIA L. Verbenaceæ.

38130. "*Gaunulega.* A small-sized shrub; the leaves when pounded fine and mixed with water form, it is said, a valuable medicine for tropical fever, using three times a day."

Distribution.—Scattered throughout India and eastward and northward to Japan, the Philippines, and northern Australia.

38131. "Said to be a valuable remedy for fever."

38132. CITRUS HYSTRIX DC. Rutaceæ. Moli.

"*Moli.* Nonedible. In several islands of the Pacific the fruit is used as soap in washing clothes and the hair."

38133. TACCA PINNATIFIDA Forster. Taccaceæ.

"*Masoa.*"

38134. DIOSCOREA sp. Dioscoreaceæ. Yam.

"Yams are troublesome to raise. They are very nutritious, however, and may be prepared in many ways. In many of the islands they are combined with coconut milk and made into dumplings."

38135. INOCARPUS EDULIS Forster. Fabaceæ. Tahiti-chestnut.

"Samoan chestnut. One of the most striking features of the forest. It bears a kidney-shaped fruit which is eaten cooked, when not quite ripe, and tastes much like a chestnut. The wood is of light color, straight, of fine texture, and very tough. It is used for burning lime in open kilns, the wood having the remarkable quality of burning readily when green. In some of the Pacific islands the nuts are preserved in pits, like breadfruit, where they ferment. In Samoa it forms a staple food for several months of the year. The wood is perishable and of little economic value; the bark is astringent."

38136. PELARGONIUM CAPITATUM (L.) L'Herit. Geraniaceæ. **Rose geranium.**

From Marseille, France. Presented by Mr. Alphonse Gaulin, American consul general, who secured them through Mr. P. Basson from the Jardin Botanique de Marseille. Received May 20, 1914.

"Rose geranium plants grown in this district. These plants are similar to those grown in the Toulon region." (*Gaulin.*)

38137. PELARGONIUM ODORATISSIMUM (L.) Solander. Geraniaceæ. **Rose geranium.**

From Nice, France. Presented by Mr. William Dulany Hunter, American consul. Received May 20, 1914.

See S. P. I. No. 38056 for description.

38138. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Paris, France. Procured from H. Fauchet & Co., through Mr. Alexander M. Thackara, American consul. Received May 9, 1914.

For previous introduction, see S. P. I. No. 34863.

38139. TRIFOLIUM ALEXANDRINUM L. Fabaceæ. **Berseem.**

From Cairo, Egypt. Presented by Mr. Ralph S. Green, through Mr. Olney Arnold, agent and consul general. Received May 18, 1914.

"Our special *Misgawi* [also called *Muscowi* and *Muskawi*] is by far the most important variety. It is tall, luxuriant in growth, and yields an astonishing amount of green forage. It is very largely grown under perennial irrigation. It requires plenty of water and will give four or five cuttings and a seed crop.

"The cultivation of Misgawi berseem is of the simplest nature, as the crop is little trouble after a stand is obtained. The seed is usually sown here in October and November, the amount used being 30 kilos per acre. The method of sowing depends on the locality. In the basins it is sown broadcast on the mud as soon as the water is off. After cotton or doura (maize) there are two chief ways of sowing the berseem. In one the standing crop is heavily watered about 10 days before harvesting, and the seed is broadcast in the water. In the other method the crop is removed and the land ridged; the ridges are split with the native plow. In case the crop is doura on the flat, a single plowing is given with the native plow. The land is then rolled, divided by ridges into convenient areas for watering, watered heavily, and the seed sown broadcast on the water. It sinks to the bottom, and on the removal of the water quickly germinates. In some cases the seed is soaked before sowing to make it sink more readily, but this does not seem to be necessary unless there is wind. Whether it is better to sow among the standing crop or not, depends on the locality. It is better to plow, if possible, but in the northern part of the delta region the cotton picking is late, and if the Misgawi is sown after the cotton is off, it is very slow in coming to maturity, as the cold weather has then set in. It is usual there to sow among the cotton when the land is being flooded after the picking.

"When the seed is sown early, and so gets the benefit of the warm weather, the plant grows rapidly and is watered as often as seems necessary. There is danger in very early sowing, however, as the young plants, particularly in the southern part of the delta region, are subject to the attacks of surface caterpillars and cotton worms. Late sowing, on the other hand, may retard a crop

38139—Continued.

very much, indeed, since cold weather in the early stages will almost stop the growth altogether. About three waterings will be needed before the first cutting, which is taken when the plants are about 25 cms. high. The time elapsing between sowing and first cutting is about 45 to 80 days, according to the character of the weather. In the majority of cases the crop is eaten on the ground by animals; in other cases the crop is cut or pulled by hand and carried. The soil should be just moist enough to stimulate the plant to grow again at once when cut. This is best attained by watering 10 days or so before it is intended to cut it off. A few days after the crop has been removed the land is again watered, and the Misgawi grows very rapidly, usually giving a second cutting in from 25 to 35 days. This crop is treated like the first, and in this way the land is made to give four good cuttings from the main crop. With early sowing a fifth may be gotten, and then the plant is allowed to flower and produce seed. With late planting the fifth cutting would be light, and it is usual to allow it to seed after the fourth.

"The cultural management of our Misgawi berseem is also very simple. Manures are never applied, as the growth is quite satisfactory without them. It will grow well on most cultivated soils. On very light soils drought must be carefully guarded against, and the plants will not grow on salt lands.

"The following are the approximate areas of Misgawi which will carry the various farm animals on average land during the season: Bullock, two-thirds of an acre; cow and young stock, slightly less; horse and mules, half an acre; donkey, one-fourth acre; sheep usually pick up what is left by the other animals and would never be allowed uncut berseem. About one-third more of the first cutting than of the subsequent ones is required for animals." (*Green.*)

"Repeated trials for several years subsequent to 1900 failed to find a region in this country where the temperature conditions were suited to the culture of this plant. It requires cool weather, without frost. For a complete account of this plant as used for forage and soiling in Egypt, see Bureau of Plant Industry Bulletin 23, Berseem: The Great Forage and Soiling Crop of the Nile Valley." (*Fairchild.*)

38140. Crotalaria juncea L. Fabaceæ. **Sunn hemp.**

From Jubbulpur, Northern Circle, India. Presented by Mr. John H. Ritchie, Deputy Director of Agriculture, at the request of Mr. A. Howard, Imperial Economic Botanist, Pusa. Received May 11, 1914.

"*Sann* hemp. The seed is not of a pure agricultural line, but is simply seed as grown by the Indian ryot and represents the common crop of this district. I may add that all the finest qualities of sunn hemp come from this part of India, which is within the limits of my working circle."

38141. Corchorus capsularis L. Tiliaceæ. **Jute.**

From Dacca, Bengal, India. Presented by the Department of Agriculture at the request of Mr. A. Howard, Imperial Economic Botanist, Pusa. Received May 11, 1914.

"*Bengal* jute."

"*Corchorus capsularis* is an annual plant, growing from 5 to 10 feet high, with a cylindrical stalk as thick as a man's finger, and seldom branching except near the top. The leaves, which are of a light-green color, are about 4 to 5 inches long by 1½ inches broad toward the base, but tapering upward into a long, sharp point with edges cut into sawlike teeth, the two teeth next

38141—Continued.

to the stalk being prolonged into bristlelike points. The flowers are small and of a whitish yellow color, coming out in clusters of two or three together opposite the leaves. The seed pods are short and globular, rough and wrinkled." (*Charles Richards Dodge, Descriptive Catalogue of Useful Fiber Plants of the World*, which see for a brief description of the plant, its cultivation, manufacture, and uses.)

38142 to 38168.

From Ventimiglia, Italy. Presented by Mr. Alwin Berger, curator, La Mortola Garden. Received April 10, 1914. Quoted notes that embody Wilson's numbers are from his original field notes.

38142 and 38143. ASPARAGUS spp. Convallariaceæ. **Asparagus.**

38142. ASPARAGUS COOPERI Baker.

See S. P. I. No. 35089 for previous introduction and description.

38143. ASPARAGUS ASPARAGOIDES (L.) W. F. Wight.
(*Asparagus medeoloides* Thunb.)

See S. P. I. Nos. 18466 and 30014 for previous introduction. The "smilax" of florists.

38144 and 38145. BERBERIS spp. Berberidaceæ. **Barberry.**

38144. BERBERIS GLOBOSA Benth.

See S. P. I. Nos. 31245 and 32920 for previous introductions.

38145. BERBERIS GUIMPELI Koch and Bouche.

See S. P. I. Nos. 32921 and 34304 for previous introductions.

"Small-leaved, short-thorned shrub of upright growth." (*Späth.*)

Referred by Rehder (in Bailey, Standard Cyclopedia) to *B. sinensis*.

38146. BETULA LUMINIFERA Winkler. Betulaceæ. **Birch.**

"(Wilson No. 17.) From Hingshanhsien, western Hupeh, China."

38147. CASUARINA GLAUCA Sieb. Casuarinaceæ. **Belar.**

See S. P. I. No. 18686 for previous introduction.

Distribution.—A large tree found along streams and in the mountains in Queensland, New South Wales, Victoria, and South Australia.

An evergreen tree, 40 to 50 feet high and 1 to 2 feet in diameter, with reddish flowers. The timber is strong and tough, and is used for staves, shingles, etc., also for rails, but not for posts. It is of a red color, beautifully marked, close in the grain, but very brittle. It might be useful for cabinetwork. A specimen of the bark contained 17.2 per cent of extract and 11.58 per cent of tannic acid. (Adapted from *Guilfoyle, Australian Plants*, and *Maiden, Useful Native Plants of Australia.*)

38148. CLERODENDRUM TRICHOTOMUM Thunb. Verbenaceæ.

"Wilson No. 216. From Ichang, western Hupeh, at an altitude of 1,000 meters."

38149 to 38151. COTONEASTER spp. Malaceæ.

38149. COTONEASTER DIVARICATA Rehder and Wilson.

(Wilson No. 232.)

"From thickets, Hingshanhsien, western Hupeh, at altitudes of 1,650 to 2,000 meters, September, 1907 (No. 232, type). This species is most nearly related to *C. simonsii* Baker, from which it is readily

38142 to 38168—Continued.

distinguished by its smaller leaves, constantly fewer flowered racemes, less acuminate sepals, and by its ovoid darker red fruits; in habit and general appearance the two species are very distinct. It seems also related to *C. mucronata* Franchet from Yunnan, which differs chiefly in the lax 2 to 4 flowered racemes and more densely hairy leaves." (*Sargent, Plantae Wilsonianae, vol. 1, p. 157–158, 1912.*)

38150. COTONEASTER HORIZONTALIS PERPUSILLA Schneider.

"(Wilson No. 496.) On bare, rocky ground, north and south of Ichang, western Hupeh, at an altitude of 1,300 to 2,000 meters. Prostrate, fruit red."

"This small-leaved form of *C. horizontalis* is the common cotoneaster of the moorlands in western Hupeh, being abundant in open, rocky ground. It is probably merely a climatic form of the type, since the seedling plants under cultivation have the larger leaves of the type." (*Rehder and Wilson. In Sargent, Plantae Wilsonianae, vol. 1, p. 155, 1912.*)

38151. COTONEASTER PANNOSA Franchet.

See S. P. I. Nos. 32936, 33159, and 37597 for previous introductions and description.

38152. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"(Wilson No. 621.) From Changlohsien, western Hupeh, at an altitude of 1,000 meters."

38153. HYPERICUM PATULUM HENRYI Bean. Hypericaceæ.

((?) Wilson No. 1355.)

"From Tachienlu, western Szechwan, abundant in thickets at altitudes of 1,500 to 2,400 meters, November, 1908. A shrub with golden flowers, from three-fourths to 1 meter tall. This variety is easily distinguished from the type by its narrower acute sepals, which are broad and rounded in the type. The cymes are several to many flowered, the flowers larger and the leaves, too, are usually larger and of thicker texture. At the Arnold Arboretum it has proved of more vigorous growth and hardier than the type." (*Rehder. In Sargent, Plantae Wilsonianae, vol. 2, p. 403, 1915.*)

38154. JASMINUM FLORIDUM Bunge. Oleaceæ. **Jasmine.**

(Wilson No. 789.)

"From Ichang, Hupeh, at altitudes of 300 to 700 meters, December, 1907. A yellow-flowered bush 1 meter tall." (*Sargent, Plantae Wilsonianae, vol. 2, p. 614, 1916.*)

See S. P. I. No. 35101 for previous introduction and description.

38155. INDIGOFERA AMBLYANTHA Craib. Fabaceæ.

(Wilson No. 786.)

"Ichang, western Hupeh, at altitudes of 300 to 1,000 meters, December, 1907. The erect, racemose inflorescence of this pleasing shrub continues to grow and bear flowers from mid-July until late autumn. The flowers vary from pale rose to red pink and are very freely produced. The shrub is common in western Hupeh but has not been recorded from Szechwan." (*Sargent, Plantae Wilsonianae, vol. 2, p. 99–100, 1914.*)

38142 to 38168—Continued.

38156. CAMPYLOTROPIS MACROCARPA (Bunge) Rehder. **Fabaceæ.**
(*Lespedeza macrocarpa* Bunge.)

(Wilson No. 576.)

"A bush 1 to 2 meters high, flowers pale purple, from thickets at an altitude of 1,000 to 1,600 meters, Hingshanhsein, western Hupeh, November, 1907." (*Sargent, Plantae Wilsonianae, vol. 2, p. 113, 1914.*)

38157. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider. **Amygdalaceæ. Cherry.**

See S. P. I. Nos. 37463, 37464, and 37688 for previous introductions and description.

"A deciduous tree with the same habit and general aspect as *P. cerasifera;* neither does it appear to differ in the flowers or foliage. The fruit, however, is smaller (about three-fourths of an inch across), yellow, and not indented at the junction with the stalk. Probably this tree and *P. cerasifera* are only varieties of one species. They flower at the same time, and are not distinguishable then. There is an old specimen near the Cactus House at Kew which is probably one of the largest in the country. It is 25 feet high, 27 feet through, and its trunk is 3 feet 8 inches in girth. Quite possibly trees may be growing in various gardens as *P. cerasifera.* The trees at Kew have rarely borne fruits, but these are quite distinct from cherry plums (*P. cerasifera*). The species is said to be a native of the Caucasus, Persia, Macedonia, etc., and to have been introduced in 1822." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 235.*)

38158. RHUS PUNJABENSIS SINICA (Diels) Rehder and Wilson. **Anacardiaceæ. Sumach.**

(Wilson No. 275.)

"From woodlands, north and south of Ichang, at altitudes of 1,000 to 1,600 meters, September, 1907. A small tree 5 to 8 meters tall; flowers whitish, fruit crimson. This variety differs from the type chiefly in the slightly winged upper part of the rhachis of the leaf, and in the usually fewer and more sessile leaflets. The fruits agree exactly with those of *R. punjabensis.* In cultivated plants from 4 to 6 years old the wing on the rhachis is very pronounced and continues down its whole length. The differences, however, are not always obvious, but until more is known of the distribution of these plants it is convenient to keep the Chinese as a distinct variety. This sumach is abundant in the thickets and margins of woods in western Hupeh and Szechwan as a small tree with a short, relatively thick trunk covered with dark-gray, moderately smooth bark. The numerous branches are spreading and form a flattened round head. In autumn when laden with pendulous panicles of dark red or crimson this tree is very attractive. Colloquially this tree is known as the *Hung fu yang* and the galls which are produced on the leaves and at the ends of the young shoots are sometimes distinguished as *Tu pei tzu,* but more usually are called *Wu pei tzu,* though this name strictly speaking belongs to the galls produced on the leaves of *R. javanica.*" (*Sargent, Plantae Wilsonianae, vol. 2, p. 176–177, 1914.*)

38142 to 38168—Continued.

38159 to 38166. Rosa spp. Rosaceæ. Rose.

38159. Rosa soulieana Crep.

See S. P. I. Nos. 21747 and 32962 for previous introductions.

38160. Rosa xanthina × (?).

Hybrid.

38161. Rosa rubus Léveille and Vant.

"Wilson No. 431. From Patung, western Hupeh, at an altitude of 600 to 1,300 meters."

"This is a common species everywhere in western Hupeh and eastern Szechwan from river level to 1,300 meters. The densely hairy shoots and leaves readily distinguish it from its near relatives. The leaflets are often large and coarsely toothed, and the leaves though variable in shape resemble those of certain species of *Rubus*. The fruit is globose, and the pedicels are relatively long and stout." (*Sargent, Plantae Wilsonianae, vol. 2, p. 309, 1915.*)

38162. Rosa banksiae normalis Regel.

"(No. 619. Near Ichang, Hupeh, China. October, 1907.) A scandent bush 6 meters and more tall and as much in diameter, flowers pure white, fragrant, fruit dull red, abundant. This rose is very abundant in western Hupeh and eastern Szechwan from river level to 1,000 meters altitude, and is fairly common in western Szechwan in the valleys of the Tung and Min Rivers and neighboring regions up to 1,500 meters altitude. It delights in glens, ravines, and rocky places generally, where it forms tangled masses 6 meters and more high and as much in diameter; commonly it rambles over trees, and Wilson has seen trees 15 meters and more tall completely festooned with this rose. The flowers are always pure white, and we have never observed any tendency toward double flowers in the wild plant; nor did Wilson see it or any of its forms cultivated in gardens in central or western China. The umbellate inflorescence well distinguishes this species from its nearest relation *Rosa microcarpa* Lindley. The root bark is used locally for strengthening and dyeing fishing nets brown. This variety appears to be confined to central and western China, and we have seen no specimens of the wild plant from regions east of the 112th meridian of longitude." (*Sargent, Plantae Wilsonianae, vol. 2, p. 317, 1915.*)

38163. Rosa helenae Rehder and Wilson.

"Wilson No. 666. From Wushan, eastern Szechwan, at an altitude of 1,000 to 1,500 meters."

"*Rosa helenae* is very abundant in rocky places from river level to 1,500 meters everywhere in western Hupeh and eastern Szechwan, but has not yet been reported from farther west. It forms in wayside thickets and by the banks of streams tangled masses often 6 meters tall and as much through, and in the margins of woods it rambles over small trees. When covered with masses of its white fragrant flowers this rose is very beautiful. It has proved quite hardy and flowered profusely at the Arnold Arboretum." (*Sargent, Plantae Wilsonianae, vol. 2, p. 311, 1915.*)

38142 to 38168—Continued.

38164. ROSA RUBUS Léveille and Vant.

"Wilson No. 666A. From Hingshanhsien, western Hupeh, at an altitude of 1,300 meters."

38165. ROSA BRUNONII Lindl.

"Wilson No. 1125. From Washan, western Hupeh, at an altitude of 1,300 to 2,000 meters."

"*Rosa brunonii* is fairly common in the valley of the Tung River, where it forms tangled masses 6 meters and more high and as much in diameter." (*Sargent, Plantae Wilsonianae, vol. 2, p. 307, 1915.*)

38166. ROSA FILIPES Rehder and Wilson.

"Wilson No. 1228 [received as No. 1128]. From near Wenchwan, western Szechwan, at altitudes of 1,300 to 2,300 meters."

A white-flowered shrub up to 15 feet in height, with a few hooked prickles and producing long runners. The scarlet, globose fruits are up to one-half inch in diameter. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

38167. SPIRAEA JAPONICA ACUMINATA Franch. Rosaceæ.

(Wilson No. 579.)

"A pink-flowered bush, three-fourths to 1¾ meters high, from roadsides, south of Ichang, western Hupeh, at altitudes of 1,000 to 1,700 meters, November, 1907." (*Sargent, Plantae Wilsonianae, vol. 1, p. 452, 1912.*)

"This species of *Spiraea*, which is a native of the northern part of China and Japan, is a handsome, hardy, deciduous shrub with brilliant rose-colored flowers, which are produced in July and August. In general appearance this species resembles the Nepal *Spiraea bella*, but is far more ornamental on account of the brilliant tint of its petals, especially when the flower buds first begin to expand. The leaves are dark green, the under sides being glaucous but not hairy." (*Paxton, Flower Garden, vol. 11, p. 113.*)

38168. VITIS RETICULATA Gagnep. Vitaceæ.

(Wilson No. 378.)

"From cliffs at altitudes of 900 to 1,500 meters, Hingshanhsien, western Hupeh, October, 1907." (*Sargent, Plantae Wilsonianae, vol. 1, p. 103, 1911.*)

38169 and 38170. STIZOLOBIUM CINEREUM Piper and Tracy. Fabaceæ.

From Amani, German East Africa. Presented by the Kaiserlich Biologisch Landwirtschaftliches Institut. Received May 9, 1914.

38169. *Mangutungu.* From Alt Langenburg. 02101.

38170. *Lusumbi.* From Usumbwa, Tabora, German East Africa. January, 1914.

"02102. Apparently identical with S. P. I. No. 32021." (*C. V. Piper.*)

38171 to 38174.

Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Received April 13, 1914. Quoted notes by Messrs. Dorsett, Shamel, and Popenoe.

38171 to 38174—Contd. (Quoted notes by Mr. Dorsett and others.)

38171. ROLLINIA DELICIOSA Safford. Annonaceæ. **Fruta de condessa.**

"(No. 224a. Rio de Janeiro, Brazil. March 20, 1914.) The *fruta de condessa* (fruit of the countess), indigenous in the State of Rio de Janeiro, whence the fruit is shipped to the markets of the capital and sold there at 100 to 400 reis (3 to 12 cents) apiece. In general form the fruit is conical to cordate, frequently 3 to 4 inches in diameter. The surface is covered with conical protuberances of varying prominence, and is creamy yellow in color when the fruit is fully ripe. The skin is rather tough and not easily broken; it surrounds the milky white, somewhat mucilaginous flesh, in which the seeds are embedded. The flavor is somewhat insipid, but is much esteemed by the Brazilians, as evidenced by the quantity of the fruit sold. The seeds are not so numerous as in many other annonaceous fruits, but they are about the same size as those of cherimoya. The fruit ripens in February and March in this region. Should be given a trial in Florida and southern California, particularly as a stock for the cherimoya and other choice annonaceous fruits."

38172. MIMUSOPS sp. Sapotaceæ.

"(No. 225a. Rio de Janeiro, Brazil, March 22, 1914.) A small sapotaceous fruit from the Jardim Botanico. Tree about 20 feet high. Fruit oval, slightly under 1 inch in length, maroon in color. The flesh surrounding the single seed is whitish and of very pleasant flavor, resembling that of the sapodilla."

38173. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"(No. 226a. From Barbados, British West Indies. April 5, 1914.) One head of sorghum, collected in a field near Bridgetown, where it was being cultivated."

38174. SOLANUM sp. Solanaceæ.

"(No. 227a. Brazil.) Data concerning seed has been lost, but it probably came from the interior of Bahia State, Brazil."

38175. PARINARI EXCELSUM Sabine. Rosaceæ.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received May 11, 1914.

Rough-skinned plum (?).

"The fruit is about the size of an *Imperatrice* plum, covered with a rough skin of a grayish color, and commonly called the *Rough-skin* or *Gray* plum. It is brought into the market on the west coast of Africa, but is not much esteemed on account of the small quantity of edible matter it contains, which is only the dry farinaceous substance surrounding the large stone." (*Lindley, Treasury of Botany, vol. 2, p. 846.*)

38176 to 38182.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 14–15, 1914. Quoted notes by Mr. Meyer.

38176. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

"(No. 1209. Village of Tachingko, near Taianfu, Shantung, China. March 21, 1914.) A large-fruited variety of Chinese hawthorn, fruit

38176 to 38182—Continued. (Quoted notes by Mr. F. N. Meyer.)

said to be red outside and inside. Of agreeable sour taste. Can be kept almost a year. A most excellent fruit for jellies, compotes, cake fillings, etc. Chinese name *Ta suan cha*, meaning 'large sour haw.'"

Grafted trees and scions.

38177. OSTERDAMIA sp. Poaceæ.

"(No. 1212. Mountains near Taianfu, Shantung, China. March 22, 1914.) A grass of low growth and of spreading habits, thriving to perfection on thin, decomposed rock soil, along mountain paths where much tramping takes place; also found on inclines, where the mat of roots prevents the soil from being washed out. Of decided value, apparently, as a bank, lawn, and golf-course grass, especially for the drier parts of the United States."

38178. AMYGDALUS PERSICA L. Amygdalaceæ. **Fei peach.**
(*Prunus persica* Stokes.)

"(No. 1213. Feicheng, Shantung, China. March 27, 1914.) A remarkable variety of clingstone peach, considered to be the best in all China. Size large to very large; shape round; very heavy, often over 1 pound apiece; skin quite downy and of a pale yellowish color with a slight blush on one side. Meat very juicy and sweet and of excellent aromatic flavor, of white color except near the stone, where it is reddish. Stone very large and pointed, meat strongly adhering to it. Ripens in early to middle October and possesses excellent shipping and keeping qualities. The trees are of erect growth when young; when older, however, they spread out considerably, but they remain of open growth. To reach their greatest perfection these peaches are fertilized every spring, while during a dry season they are irrigated from wells; the fruit is also thinned out. The soil wherein they seem to thrive best is a porous, light clayey loam of reddish color, retaining moisture quite well but not becoming too soggy. The local people calculate that on an average a tree supplies $10 worth (Mexican) of fruit each season, and they consider an orchard of these trees a very valuable asset indeed. The climate around Feicheng is of a semiarid nature, and this variety of peach may be expected to thrive especially well in the regions west of the Rocky Mountains. Chinese name *Fei t'ao*, meaning 'Fei peach.'"

Grafted trees and scions.

38179. SALIX sp. Salicaceæ. **Willow.**

"(No. 1179. Village of Chenkiao, Honan, China. March 8, 1914.) A willow of golden yellow color, much planted on the sandy flats along the Yellow River for sand-binding purposes. Of value for similar uses, especially for the drier parts of the United States."

38180. ZINZIBER OFFICINALE Rosc. Zinziberaceæ. **Ginger.**

"(No. 1214. Feicheng, Shantung, China. March 26, 1914.) A variety of ginger grown on sandy loam in the vicinity of Minyang to the south of Taianfu. Much hawked about throughout Shantung and retailing at from 10 to 12 cents (Mexican) per pound. Is much relished as a condiment in soups and with meat dishes and considered to be very healthful, so much so in fact that Confucius advised his pupils to make ginger one of their relishes to be eaten daily. The Chinese plant the rhizomes as soon as the soil becomes warm and harvest the plants in the autumn after a light frost; the rhizomes are stored in cool dugouts and kept

38176 to 38182—Continued. (Quoted notes by Mr. F. N. Meyer.)

covered over with slightly moist, sandy soil. Chinese name *Hsien chiang*, meaning 'fresh ginger.'"

Rhizomes.

38181. QUERCUS LIAOTUNGENSIS Koidzumi. Fagaceæ. **Oak.**

"(No. 188a. Hsiao Wutaishan, Chihli Province, China. August 25, 1913.) A low-growing, scrubby oak, found in thickets at elevations between 5,000 and 7,000 feet above sea level. Looks in leaf very much like *Q. pedunculata*. Of value as a shade tree in parks and as a ground cover on mountain slopes in the cooler parts of the United States."

38182. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

"(No. 2013a. Chiningchow, Shantung, China. March 16, 1914.) A Chinese chestnut, of which the nuts have a somewhat peculiar form, being bent in at their tops. From the Taishan region near Taianfu, Shantung, where the trees are all badly attacked by the bark disease *Endothia parasitica*."

38183. HOLCUS SORGHUM L. Poaceæ. **Giant Sudan sorghum.**
(*Sorghum vulgare* Pers.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Cuttings received May 14, 1914.

"The stalk of this sorghum is very tall, sometimes reaching a height of 4.24 meters. The leaves are large and the panicles are small. This sorghum does not mature in Algiers but is propagated by cuttings." (*Trabut.*)

38184 to 38187.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 4, 1914. Cuttings of the following; quoted notes by Mr. Meyer.

38184. PAULOWNIA FORTUNEI (Seem.) Hemsley (?). Scrophulariaceæ.

"(No. 1180. Village of Chenkiao, Honan Province, China. March 8, 1914.) A Paulownia, planted here and there on sandy lands as a soil binder and windbreak. The wood is of a very light nature and is used in the construction of light furniture, playthings for children, bowls, jars, etc. Of value as a soil binder and an ornamental park tree, especially for the mild-wintered sections of the United States. Chinese name *T'ung shu*."

Root cuttings.

38185. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"(No. 1186. Tsaochowfu, Shantung, China. March 10, 1914.) A pomegranate, producing very large double flowers of a brilliant red color. No fruits are set. Chinese name *Shuang shih liu hua*, meaning 'double-flowering pomegranate.' Obtained from the garden of the Roman Catholic Mission at Tsaochowfu."

38186. VITIS VINIFERA L. Vitaceæ. **Grape.**

"(No. 1187. Tsaochowfu, Shantung, China. March 10, 1914.) A Chinese variety of grapevine, producing large bunches of black grapes, the individual berries of which are very elongated. This grape is very sweet and possesses good keeping and shipping qualities. Chinese name *Nai tzŭ p'u t'ao*, meaning 'nipple grape.'"

38184 to 38187—Continued. (Quoted notes by Mr. F. N. Meyer.)

38187. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 1188. Near Kuyehsien, Shantung, China. March 14, 1914.) A large-fruited variety of jujube of oblong shape and reddish brown color. Good for drying. Local name *Ta tsao*, meaning 'large jujube.'"

38188. CASTILLA NICOYENSIS O. F. Cook. Moraceæ. **Central American rubber.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received May 14, 1914.

See S. P. I. Nos. 33784 and 35892 for previous introductions and description.

38189 and 38190. TRIFOLIUM PRATENSE L. Fabaceæ. **Red clover.**

From Rosthern, Saskatchewan, Canada. Presented by Mr. Seager Wheeler, through the Office of Forage-Crop Investigations. Received May 11, 1914.

"Seed of red clover grown at Rosthern, Saskatchewan, Canada. It was grown under very severe winter conditions and is expected to prove extremely hardy." (*J. M. Westgate.*)

38189. From seed of S. P. I. No. 31205.

38190. From seed of S. P. I. No. 31232.

38191. BERTHOLLETIA NOBILIS Miers. Lecythidaceæ. **Brazil nut.**

From Para, Brazil. Presented by the American consul. Received May 13, 1914.

38192 and 38193. DIOSPYROS spp. Diospyraceæ.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received May 15, 1914.

38192. DIOSPYROS DISCOLOR Willd. **Mabola.**

See S. P. I. Nos. 19216, 26112, and 30518 for previous introductions and description.

"A tree of moderate size, 40 feet or more high; the trunk furnishes a hard, compact ebony of an exceedingly black color. Fruit thick, fleshy, globose or subglobose, densely hairy, reddish, like a quince, 4 to 6 seeded, with flesh rose colored, 3 to 4 inches in diameter; pulp white, hairs ferruginous; albumen cartilaginous, not ruminated; fruiting calyx flattish, appressed, rather more than 1 inch in diameter. The wood is very hard, of a dark flesh color, which in time becomes black like ebony. The fruit has an agreeable smell like a quince (but sometimes not so), and is edible after removing the hairs and skin." (*Hiern, Monograph of the Ebenaceæ, p. 251, 1873.*)

38193. DIOSPYROS SUBTRUNCATA Hochreutiner. **Persimmon.**

Distribution.—A persimmon found in Sumatra, closely related to *D. borneensis* Hiern, from which it differs in having the calyx truncate, the corolla tomentose outside, and a slightly larger fruit.

38194 to 38205. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Sapporo, Japan. Presented by Mr. T. Minami, College of Agriculture, Tohoku Imperial University. Received May 13, 1914. Seeds produced in Manchuria last year; quoted notes by Mr. Minami.

38194. "(No. 1.) *Kokkoku kinsui* (means red glume and thick ear)."

38195. "(No. 2.) *Kōnen-kōryō* (means red glutinous sorghum)."

38196. "(No. 3.) *Gai-hansaku* (meaning is not clear)."

38197. "(No. 4.) *Shōkōwaishin-han-kōryō* (means small yellow dwarf)."

38198. "(No. 5.) *Nen-kōryō-kō* (means glutinous sorghum which is red)."

38199. "(No. 6.) *Shōkōkoku-han-kōryō* (small yellow glume)."

38200. "(No. 7.) *Kokkoku dagan-kōhan-kōryō* (means black glume and red grain, looks like snake's eye)."

38201. "(No. 8.) *Kokkoku sasui* (means black glume and loose ear)."

38202. "(No. 9.) *Chikuyō-seihan-kōryō* (means bamboo leaf and green grain)."

38203. "(No. 10.) *Kokkoku hakunen-kōryō* (means black glume and white glutinous grain)."

38204. "(No. 11.) *Kokoku waishin-han-kōryō* (means black glume and dwarf)."

38205. "(No. 12.) *Kijaku-haku-han-kōryō* (means white grain which is very much liked by swallows)."

38206 and 38207.

From Tokyo, Japan. Procured from the Tokyo Plant, Seed & Implement Co. Received May 14, 1914.

38206. PRUNUS SERRULATA Lindl. Amygdalaceæ. **Flowering cherry.**

"Young shoots slightly hairy. Leaves broadly ovate or obovate, 2 to 4¼ inches long to 1¼ to 2¼ inches wide; wedge shaped or almost rounded at the base, the apex abrupt narrowed to a long point, margins doubly toothed, both surfaces, but especially the lower one, hairy on the midrib and veins; stalk one-fourth to half an inch long; hairy. Flowers in short racemes, sometimes reduced to a fascicle of usually four blossoms; each flower three-fourths of an inch across, the five petals jagged at the apex, borne on a bristly hairy stalk one-half to three-fourths of an inch long; calyx tube hairy; the lobes ovate triangular; glabrous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, under *P. pseudocerasus*.)

Introduced for use as a stock on which to test both the fruiting cherries and the Japanese double-flowered forms.

37207. PISUM SATIVUM L. Fabaceæ. **Pea.**

38208. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Batum, Russia. Presented by Mr. Leslie A. Davis, American consul. Received May 16, 1914.

"Grown in the Caucasus. I think a better quality is grown in Turkestan and that the Turkestan seed is planted in the Caucasus to some extent." (*Davis.*)

38209. ANACARDIUM EXCELSUM (Bert. and Bal.) Skeels. (*Anacardium rhinocarpus* DC.) Anacar-[diaceæ.

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received May 18, 1914.)

"Fruits of a rare tree. This fruit was collected at Casilda, Trinidad, Santa Clara Province, and is commonly known as *nariz* on account of its similarity to the fruit of the *Marañon* (*Anacardium occidentale*) in appearance, foliage, and inflorescence. It is a very tall tree; the leaves are very large and the peduncle not so succulent as in the *Marañon*. The botanist thinks that it could perhaps be *Anacardium rhinocarpus*, and says that it is found only in the district of Trinidad, and no use is made of the tree or its fruits." (*Crawley.*)

38210 to 38212.

From Asmara, Eritrea, Africa. Presented by the Direzione di Colonizzazione Service. Received May 18, 1914.

38210. COLUTEA ISTRIA Miller. Fabaceæ.
(*Colutea halepica* Lam.)

See S. P. I. No. 33029 for previous introduction.

"A shrub 1 to 4 meters high with the appearance of *C. arborescens*, from which it differs in its smaller, oblong, slightly silky leaves, in its raceme of 2 to 4 flowers, and in its legumes, which are more acute at the two extremities. Rocky places of the Altipiano and its slopes, at 1,600 to 2,600 meters." (*Adriano Fiori, Boschi e Piante legnose dell' Eritrea, p. 184.*)

38211. SESBAN sp. Fabaceæ. **38212.** (Undetermined.)

38213 to 38228.

From Tokyo, Japan. Presented by the director, Japanese Imperial Department of Agriculture. Received May 15, 1914.

38213 to 38220. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) **Soy bean.**

38213. *Tsurunoko.*
38214. Var. *Aksaya.*
38215. *Gowari.*
38216. *Hadaka.*
38217. *Aotsurunoko.*
38218. *Kōsuirasu.*
38219. Var. *Juningonomi.*
38220. *Aoniūdō.*

38221 to 38227. ORYZA SATIVA L. Poaceæ. **Rice.**

38221. Var. *Shinriki.*
38222. Var. *Aikoku.*
38223. *Takenari.*
38224. *Omachi.*
38225. *Kame-no-o.*
38226. *Ōbō.*
38227. *Shekitori.*

38228. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) **Soy bean.**

Shirashaya.

38229. DIOSCOREA sp. Dioscoreaceæ. **Yam.**

From Brooklyn, N. Y. Purchased from Mr. A. I. Wilson. Received May 22, 1914.

"Yams sell at 6 cents per pound." (*Wilson.*)

"A yam of good quality. The flesh is mealy, yet firm and of good flavor. The specimen received weighed 6 pounds." (*R. A. Young.*)

38230 to 38285.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., March 30, 1914. Quoted notes by Mr. Meyer.

38230. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

"(No. 1105. Sianfu, Shensi, China. January 30, 1914.) An apricot, said to bear large fruits, besides being very ornamental when in blossom. The trees grow to a remarkably large size. Scions collected in an old mandarin's garden."

38231. MALUS sp. Malaceæ. **Crab apple.**

"(No. 1106. Sianfu, Shensi, China. January 30, 1914.) A flowering crab apple, of low-branching, wide-spreading growth, said to bear masses of small double flowers of rosy red color. Scions obtained from the garden of the English Baptist Mission Hospital."

38232. POPULUS sp. Salicaceæ. **Poplar.**

"(No. 1108. Village of Beetchi, near Fuping, Shensi, China. February 2, 1914.) A poplar of remarkable fastigiate growth, used as a windbreak on a dry loess table-land. Apparently the same as No. 1064 [S. P. I. No. 37482], but possibly more drought resistant. Of value as a windbreak for the drier parts of the United States."

Cuttings.

38233 to 38235. SALIX sp. Salicaceæ. **Willow.**

From the village of Tungchiaopu, Shensi, China. Cuttings collected February 3, 1914.

38233. "(No. 1120.) A willow, growing to be a tall tree with heavy trunk. The main branches are of erect growth and of dark-green color, but the young twigs are slender and gracefully drooping while possessed of a delicate yellowish color. A fine tree for parks, especially when planted in a clump or as solitary specimens, where they can be seen from some distance."

38234. "(No. 1121.) A willow, forming heavy trunks, of erect-spreading growth, while the reddish colored young twigs are slightly drooping. Of value for parks when planted in clumps or as solitary specimens where they can be seen for some distance."

38235. "(No. 1122.) A willow, growing to be a tall tree, forming heavy trunks with dark-brown bark. The young branches are somewhat pendent. This and the preceding two numbers [S. P. I. Nos. 38233 and 38234] are all three grown locally as timber trees. They seem to be of remarkably fast growth, especially when planted alongside irrigation canals."

38236. WIKSTROEMIA CHAMAEDAPHNE (Bunge) Meissner. Thymelæaceæ.

"(No. 1124. Near Kwanshanchen, Shensi, China. February 4, 1914.) Rooted plants of a thymeleaceous small shrub, growing from 1 to 3 feet in height, having somewhat leathery, small foliage, which is semipersistent throughout winter; bears small terminal racemes of yellow flowerlets. Found here and there on dry banks and hill slopes in great quantities. The bark is of a tenacious nature and the plant might possibly be cultivated as a prospective leather-paper supply."

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38237. EUONYMUS sp. Celastraceæ.

"(No. 1125. Village of Tchangpai, Shensi, China. February 5, 1914.) Cuttings of spindle wood, usually seen as a shrub, but when not molested growing to be a medium-sized tree. The plant is an excellent bank binder, throwing up suckers all around; it stands drought to a wonderful extent, while it resists alkali also to a certain degree. In most places this shrub is cut down every year, but this treatment seems to make it spread more. It deserves to be given a thorough test as a bank and soil-binding plant, especially in the semiarid parts of the United States."

38238. SALIX sp. Salicaceæ. **Willow.**

"(No. 1126. Near Chaoyi, Shensi, China. February 7, 1914.) Cuttings of a willow of wide-spreading growth, forming a characteristically well rounded head when becoming older. Apparently able to stand a goodly amount of drought and alkali."

38239. GLEDITSIA sp. Cæsalpiniaceæ.

"(No. 1128. Near Puchowfu, Shansi, China. February 8, 1914.) A very thorny shrub of rather tall growth, occurring on dry places. Said to bear whitish flowers. Of value perchance as a hedge shrub for the drier sections of the United States. Chinese name *Lang ya ch'ih*, meaning 'wolf's teeth.' Roots, to be planted slantingly."

38240 to 38242. PYRUS CHINENSIS Lindl. Malaceæ. **Pear.**

From near Puchowfu, Shansi, China. Scions or cuttings collected February 10, 1914.

38240. "(No. 1136.) A very large variety of Chinese pear, producing fruits that often weigh 1 pound apiece. Of barrel shape, color dark yellow, flesh nonmelting, somewhat coarse in texture, but juicy and sweet to the taste. Possesses good keeping and shipping qualities. Of value for hybridization experiments. Chinese name *Chin li*, meaning 'golden pear.'"

38241. "(No. 1137.) A variety of Chinese pear, of medium large size, of round form, color pale yellow, flesh nonmelting, of somewhat granular texture, juicy, and of but moderately sweet taste. Of value for hybridization experiments and for canning purposes. Chinese name *Pai li*, meaning 'white pear.' This *Pai li* is quite different from the Peking pear that passes under the same name."

38242. "(No. 1138.) A variety of Chinese pear of apple shape and looks, being red cheeked on one side and ocher yellow on the other. Flesh hard and sourish. A most remarkable keeper and shipper. Of value as a cooking pear, for sauces, and possibly in hybridization experiments. Chinese name *Hung hsiao li*, meaning 'red sour pear.'"

38243 to 38247. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

From near Paihsiangchen, Shansi, China. Scions collected February 13, 1914.

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38243. "(No. 1140.) A very valuable variety of jujube, producing fruits among which there are some as large as ordinary hens' eggs; fruits of roundish oblong form, of somewhat cylindrical shape; color mahogany brown; meat quite sweet and of a solid texture. This is one of the most famous jujubes of all China, and merchants come from far away to buy them up. The fruits can be eaten fresh, sun dried, baked in bread, stewed with rice, millet or meat, dry baked in the oven, preserved with honey and cane sugar, and also put up in weak brandy, tasting very well in each of these ways. They are also prized for medicinal purposes, especially when several years old, and, though 1-year-old fruits retail locally at 8 to 10 cents (Mexican) per catty, fruits 7 to 10 years old sell at $1 (Mexican) and over for the same weight. They are used for relief of pain in the chest and respiratory organs and are considered to be very strengthening. The trees of this variety appear not to grow to large size; they are of open, loose habit, and do not produce fruit of uniform size. In the vicinity of Paihsiangchen several thousand acres are given over to their cultivation, and it seems to be a paying industry, as the acreage is constantly being enlarged. Propagation is done only by planting suckers; grafting, budding, and ringing seem to be unknown to the local people. A peculiar bunch disease is much in evidence on this variety as well as on other varieties, and growers complain that it is causing considerable reduction of the crop; they do not combat it, however, by cutting the bunches out. Special attention should be paid in America that this disease does not get a foothold. Chinese name of this variety *Ta yüan tsao*, meaning 'big round jujube.'"

38244. "(No. 1141.) A local variety of jujube, producing fruits of medium size, of elongated cylindrical shape; color, light mahogany brown. Can be eaten fresh, but they are best when put up in weak brandy. Chinese name *T'iao tsao*, meaning 'stick jujube,' referring to the shape of the fruit."

38245. "(No. 1142.) A variety of jujube, said to be of medium size, of tapering, elongated form, good only when fresh. Chinese name *Shui mên tsao*, meaning 'water-breath jujube.'"

38246. "(No. 1143.) A variety of jujube of medium size, of oblong-pointed form; color, light mahogany brown. Fruits can be brandied. Trees of vigorous growth, making long, outstretched branches. Chinese name *Chi hsin tsao*, meaning 'chicken-heart jujube.'"

38247. "(No. 1144.) A variety of jujube, said to be of medium size, of round form; color, dark mahogany brown; meat somewhat brittle. Good only when fresh. Chinese name *Yüan ts'ui tsao*, meaning 'round, fragile jujube.'"

38248. JASMINUM NUDIFLORUM Lindley. Oleaceæ. Jasmine.

"(No. 1145. Paihsiangchen, Shansi, China. February 14, 1914.) A yellow-flowered jasmine occurring at the edges of dry banks, ravines, and grave mounds, flowering before the leaves come out, sometimes even in midwinter. The plants are of spreading habit, the very long, slender,

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

and angular green branches rooting wherever they touch moist ground and making a regular matting of living twigs, keeping soil and stones from moving away. This plant is by its nature fit to cover rockeries, to be grown at the edges of terraces, to cover old walls, etc., and deserves to be given a thorough test as a bank and soil binder, especially in the sections of the United States where the winters are not too severe, while the summers can be hot and dry. Chinese name *Ying ch'un hua*, meaning 'meeting-the-spring flower.'"

Cuttings.

38249 to 38253. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

Scions of the following:

38249. "(No. 1146. Fuma, near Anyihsien, Shansi, China. February 14, 1914.) A variety of jujube supposed to be the largest of all; fruits are said to be larger than ordinary hens' eggs and resemble small pears; oval shape; color, mahogany brown. This variety is said to have originated through having grafted an ordinary jujube on pear roots(?). Chinese name *Li tsao*, meaning 'pear jujube.' Good only when eaten fresh."

38250. "(No. 1147. Village of Nanyangyao, near Anyihsien, Shansi, China. February 14, 1914.) A variety of jujube of peculiar shape, the top being larger than the base in some fruits and protruding above it with a circular constriction just below, giving the impression of one fruit placed above another; size, medium; color, light mahogany. Can be eaten fresh or put up in weak brandy. Chinese name *P'o p'o tsao*, meaning 'mother-in-law jujube,' having reference to the peculiar shape of the fruit, in connection with the fact that a Chinese wife generally sits under the rule of her husband's mother."

38251. "(No. 1148. Village of Siaoshu, near Anyihsien, Shansi, China. February 14, 1914.) A variety of jujube of oval, tapering shape, medium sized; color, light brown-red. Can be put up in weak brandy. Chinese name *Kên tsao*, meaning 'hard jujube.'"

38252. "(No. 1149. Village of Nantsunwu, near Anyihsien, Shansi, China. February 14, 1914.) A variety of jujube, the fruits of which are said to be flat in shape and somewhat undulated. The branches are curiously bent and twisted, while the tree assumes a beautiful bowl-like form. Chinese name *Kuai tsao*, meaning 'bent jujube.'"

28253. "(No. 1150. Village of Nantsunwu, near Anyihsien, Shansi, China. February 14, 1914.) A variety of jujube, said to be much like the preceding (No. 1149); the branches, however, are less twisted, while the form of the tree is more open and loose."

38254. CATALPA BUNGEI C. A. Meyer. Bignoniaceæ.

"(No. 1151. Village of Wangyuko, near Anyihsien, Shansi, China. February 15, 1914.) A quick-growing Chinese timber tree, growing to large size, specimens being seen 100 feet tall, with trunks 10 to 15 feet in circumference a few feet above the ground. The Chinese plant this tree for its wood, which is strong, light, durable, and nonwarping. It resembles walnut to some extent and is much in demand for table tops and for

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

fine furniture. This tree might possibly be profitably cultivated in the semiarid regions of the United States where the winters are not too severe, while the summers may be quite hot. They are easily propagated from suckers that spring up from roots that are close to the surface of the ground, and the tree thrives best when planted close to irrigation canals and on sheltered places. They prefer a porous soil. Chinese name *Ch'iu shu*, meaning 'autumn tree.'"

Young rooted trees.

38255. POPULUS TOMENTOSA Carr. Salicaceæ. **Poplar.**

"(No. 1152. Village of Wangyuko, near Anyihsien, Shansi, China. February 15, 1914.) A quick-growing form of white poplar, much planted by the Chinese for its timber. Forms a tall, straight trunk when kept trimmed up high. Of value as a timber tree on the farm and possibly a good wood for match sticks and for light fruit boxes. May thrive especially well in the southwestern United States. Chinese name *Ta pai yang shu*, meaning 'big white poplar.'"

Rooted trees.

38256. GLEDITSIA sp. Cæsalpiniaceæ.

"(No. 1155. Village of Changtienyuan, Shansi, China. February 16, 1914.) A soap-pod tree, apparently of scrubby growth, occurring on dry, rocky mountain slopes. May possibly possess value as a hedge shrub, especially in semiarid sections."

Roots.

38257. SACCHARUM NARENGA (Nees) Wallich(?). Poaceæ. **Sugar cane.**

"(No. 1164. Chengchow, Honan, China. February 25, 1914.) A very hardy variety of Chinese sugar cane cultivated here and there along the Yellow River. The canes reach a height of 4 to 6 feet, have a diameter of about 1 inch, and are of a beautiful purplish violet color. Sugar percentage low. Of value possibly for the milder parts of the United States as a source of supply for sirups, molasses, and sweets for the children. The canes should be stored during the winter in frost-proof cellars or dugouts with dry soil sprinkled over and between them. In China young and old are fond of pieces of raw sugar cane, which in the milder sections form one of the most common articles of winter sweetmeats. Chinese name *Kan chê*."

Cuttings.

38258 to 38271.

From the village of Wulipu, Honan, China. Collected February 27, 1914. Scions of the following:

38258 to 38261. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.** (*Ziziphus sativa* Gaertn.)

38258. "(No. 1165.) A variety of jujube, producing fruits of medium large size, of cylindrical shape, slightly tapering down toward base; color light mahogany brown; meat of firm texture and very sweet; can be eaten fresh, as well as smoked and dry baked in the oven. Chinese name *Hui tsao*, meaning 'ashy jujube,' referring to its looks before being quite ripe."

38359. "(No. 1166.) A variety of jujube, said to be of medium size, of round form; meat of crackling nature. Eaten fresh only. Chinese name *Su tsao*, meaning 'brittle jujube.'"

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38260. "(No. 1167.) A variety of jujube, said to be of medium size, of elongated shape, tapering toward the base. Ripens very late in the summer. Good only when fresh. Chinese name *Chui yüeh ch'ing tsao*, meaning 'ninth-moon green jujube' (the Chinese ninth moon being October)."

38261. "(No. 1168.) A variety of jujube, said to be medium large, of barrel shape, and pointed on both sides. Good only when fresh. Chinese name *Ma ya t'ou tsao*, meaning 'horse's-teeth jujube.'"

38262 to 38271. PYRUS CHINENSIS Lindley. Malaceæ. **Pear.**

38262. "(No. 1169.) A variety of Chinese pear, growing to a very large size, of round-oblong shape; color dark yellow; meat of somewhat coarse texture, but juicy and sweet; a good keeper and shipper. Chinese name *Ê li*, meaning 'swan pear.'"

Of value like No. 1136 [S. P. I. No. 38240] for hybridization purposes.

38263. "(No. 1170.) A variety of Chinese pear, said to reach very large size, of round-oblong shape; color dark yellow; does not keep long. Chinese name *Pin li*, meaning 'luscious pear.' Of value possibly in breeding experiments."

38264. "(No. 1171.) A variety of Chinese pear, said to be large, of round shape and of pale-yellow color. Ripening in summer and not keeping long. Chinese name *Sha pai li*, meaning 'sand white pear.' Of value possibly in breeding experiments.

38265. "(No. 1172.) A variety of Chinese pear, said to be large, round, and of purplish violet color. Able to withstand long shipping and keeping until late in spring. Chinese name *Tzŭ su li*, meaning 'violet brittle pear.'"

38266. "(No. 1173.) A variety of Chinese pear, said to be of medium size, of real pear shape; sweet; not a keeper. Chinese name *Nai li*, meaning 'milk pear,' or *Yin li*, which means 'silver pear.' Of value possibly in breeding experiments."

38267. "(No. 1174.) A variety of Chinese pear, said to be of medium size, of yellow color; very sweet; ripening in summer and not keeping. Chinese name *Huang li*, meaning 'yellow pear.' Of value possibly for breeding purposes."

38268. "(No. 1175.) A variety of Chinese pear, said to be large, of green color, of sweet taste, ripening in early August; does not possess keeping qualities. Chinese name *Ch'ing p'i t'ien li*, meaning 'green-skin sweet pear.' Of value possibly for breeding purposes."

38269. "(No. 1176.) A variety of Chinese pear, said to be medium large; of round shape; sweet. Ripening in summer and not a keeper. Chinese name *Shui pai li*, meaning 'water white pear.' Of value possibly for breeding purposes."

38270. "(No. 1177.) A variety of Chinese pear, said to be large, of barrel shape; color pale yellow; sweet. Does not possess keeping qualities. Chinese name *Kao ting pai li*, meaning 'tall top white pear.' Of value possibly for breeding purposes."

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38271. "(No. 1178.) A variety of Chinese pear, said to be of medium size; round oblong in shape, of russet-brown color; flesh soft and mealy, does not keep long. Chinese name *T'ien kua li*, meaning 'sweet melon pear.' Of value possibly in breeding."

38272 to 38274. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.** (*Prunus persica* Stokes.)

From near Taianfu, Shantung, China. Scions or cuttings collected March 20, 1914.

38272. "(No. 1197.) A Chinese variety of peach, said to be very large, weighing up to 1 pound apiece. Of greenish white color, of pointed shape; meat very juicy; sweet and fragrant. Possessing good keeping qualities, being kept until December. Chinese name *Fo shou t'ao*, meaning 'Buddha's hand peach.'"

38273. "(No. 1198.) A Chinese variety of peach, said to be medium large, of white color; meat firm and sweet. A late ripener and possessing good keeping qualities. Chinese name *Ch'iu pai t'ao*, meaning 'autumn white peach.'"

38274. "(No. 1199.) A flowering variety of peach, said to be very ornamental when bearing its large rosy red flowers. The fruits are small, of dark rosy red color and of a peculiar shape, having 3 points; taste sweet and reminding one of pineapple. Chinese name *Pi t'ao*, meaning 'fragrant peach.'"

38275 and 38276. AMYGDALUS PERSICA PLATYCARPA (Decne.) Ricker. Amygdalaceæ.

38275. "(No. 1200.) A Chinese variety of peach, said to be of large size, of flat shape; meat juicy and sweet. Color greenish outside, while red inside, especially around the stone. Chinese name *Ta pien t'ao*, meaning 'large flat peach.'"

38276. "(No. 1201.) A Chinese variety of peach, said to be small, of flat shape, meat juicy and sweet, color red. Chinese name *Hsiao pien t'ao*, meaning 'small flat peach.'"

38277 and 38278. PYRUS CHINENSIS Lindley. Malaceæ. **Pear.**

From near Taianfu, Shantung, China. Scions collected March 21, 1914.

38277. "(No. 1202.) A variety of pear, said to be medium large, of round-oblong shape, of yellow color; juicy and sweet. Possesses good keeping qualities. Chinese name *Chin sui tzŭ li*, meaning 'golden earring pear.'"

38278. "(No. 1203.) A variety of pear, said to be medium large, of round-oblong shape, yellow color, good flavor, breaking easily when falling. Chinese name *Su li*, meaning 'brittle pear.'"

38279 and 38280. MALUS sp. Malaceæ. **Apple.**

From the village of Fanchiachwang, near Taianfu, Shantung, China. Scions collected March 22, 1914.

38279. "(No. 1204.) A variety of apple, said to be large, of red color; flesh firm and of sweet flavor. Chinese name *Ta p'in kuo*, meaning 'large apple.' Apparently very drought resistant and possibly of value for the drier parts of the United States."

38230 to 38285—Continued. (Quoted notes by Mr. F. N. Meyer.)

38280. "(No. 1205.) A variety of crab apple, said to be large, of light-green color and of subacid taste. Chinese name *Ta sha kuo*, meaning 'large crab apple.' Of value for the drier parts of the United States."

38281 and 38283. PRUNUS spp. Amygdalaceæ.

From the village of Tachingko, near Taianfu, Shantung, China. Collected March 21, 1914.

38281. PRUNUS ARMENIACA L. **Apricot.**

"(No. 1206.) A variety of apricot, said to be very large; color half red and half yellow; sweet and juicy. Chinese name *Ta shui hsing*, meaning 'large water apricot.'"

38282. PRUNUS sp. **Apricot plum.**

"(No. 1207.) Scions of an apricot plum, said to produce medium large fruits of red color. Chinese name *Hsing mei*, meaning 'apricot plum.'"

38283 and 38284. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

From the village of Tachingko, near Taianfu, Shantung, China. Scions collected March 21, 1914.

38283. "(No. 1208.) A variety of Chinese hawthorn, fruit said to be large, of red color outside, while the meat inside is white, of agreeable subacid taste, not keeping as long as other varieties. Chinese name *Mien shan cha*, meaning 'soft mountain haw.'"

38284. "(No. 1210.) A variety of Chinese hawthorn, fruit said to be large and of red color both inside and out. Chinese name *Hung li shan cha*, meaning 'red inside mountain haw.' This may possibly be the same variety as No. 1209 [S. P. I. No. 38176]. The Chinese haw fruit seems to thrive best on well-drained semigravelly or sandy loam, and the best quality of fruit is produced on trees that grow on mountain terraces. It is not unlikely to become a fruit of considerable importance in America, whenever it shall become known. The Chinese graft and bud this haw on wild and seedling stock of *Crataegus pinnatifida*, but experiments should be made, to determine whether other species of Crataegus will be suitable also for stocks."

38285. ALBIZZIA sp. Mimosaceæ.

From the mountains near Taianfu, Shantung, China. Root cuttings collected March 22, 1914.

"(No. 1211.) A silk-flowered tree, occurring on sterile, rocky mountain slopes; grows into a medium-sized tree. Apparently a good soil binder and of value possibly for the drier sections of the United States as a soil retainer on mountain slopes and as an ornamental park tree. The wood is tough and is used in the construction of carts. Local name *Fu jung hua*, meaning 'old-man's-face flower.'"

38286. GOSSYPIUM sp. Malvaceæ. **Cotton.**

From Brazil. Purchased through Cowdrey & Co., New York City. Received April 3, 1914.

38287 to 38290.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden, through Mr. Wilson Popenoe of the Bureau of Plant Industry. Seeds of Sikkim plants received May 14, 1914.

38287. BETULA UTILIS D. Don. Betulaceæ. **Birch.**

Distribution.—A large tree found at an altitude of 7,000 to 14,000 feet on the temperate slopes of the Himalayas from Kashmir to Sikkim in northern India, and eastward through China and Japan.

"A tree 60 feet high, with a creamy white trunk and branches; bark peeling off in papery flakes; young shoots densely covered with gray down, becoming reddish brown. Leaves ovate, rounded at the base, pointed, 2 to 3½ inches long, about two-thirds as wide, rather coarsely and irregularly toothed; upper surface dark green, with scattered down; lower surface pale, downy on the midrib and veins, the latter in 9 to 12 pairs; leafstalk three-fourths of an inch long, downy; fruiting catkins 1½ inches long, one-third of an inch in diameter, cylindrical; scales downy on the margins, the middle one considerably the longer, and rounded at the end. Native of the Himalayas; introduced by Sir Joseph Hooker in 1849; perhaps before, certainly several times since, from which, judging by its rarity, it would seem that it is not very hardy. A tree over 30 feet high, planted by the late Mr. Chambers at Grayswood in 1882, is the best I know. Young plants have been raised at Kew from its seed, but have not yet had to withstand hard frost. In a letter Mr. Chambers remarked that the bark of his tree 'even to the branches is creamy white, the young twigs of an orange chocolate, very pretty in winter.' Some trees also exist in Trinity College Botanic Gardens, Dublin." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 263.*)

38288 and 38289. MICHELIA spp. Magnoliaceæ.

38288. MICHELIA CATHCARTII Hook. f. and Thoms.

Distribution.—A tall tree with white flowers, found on the temperate slopes of the Himalayas at an altitude of 5,000 to 6,000 feet in Sikkim, northern India.

38289. MICHELIA LANUGINOSA Wallich.

Distribution.—A large bush or tree, with large white flowers, often 4 inches in diameter, found on the temperate slopes of the Himalayas at an altitude of 5,000 to 7,000 feet, from Nepal to Bhutan in northern India.

38290. ALNUS NEPALENSIS D. Don. Betulaceæ. **Alder.**

38291 and 38292.

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received May 25, 1914. Quoted notes by Commander Stearns.

38291. PIPER METHYSTICUM Forster. Piperaceæ. **Ava (kava).**

"These cuttings are of the best variety grown in the island, and in planting them care should be taken to place the stalk at an angle of about 30° from the perpendicular, as it grows far more quickly in this position. Most of the ava raised in American Samoa is used as a beverage. The product of the ava plant is ready for use after about 4 to 6 years' growth."

38291 and 38292—Contd. (Quoted notes by Commander Stearns.)

38292. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"The mummy-apple tree is very prolific in Samoa. Any land that is cleared, no matter where its location, unless immediately put in cultivation, will be covered in a few months with a thick growth of mummy apples. It has been suggested that the mummy-apple seeds were carried by birds, but they grow so prolifically that this seems almost impossible. I have known tracts of land cleared in Samoa and inside a year to be so thick with mummy-apple trees that a man could not walk over the land without cutting his way through, the mummy-apples being so closely spaced and coming up without apparent cause. Mummy-apples are used here as a fruit for breakfast. The seeds are eaten by many as an aid to digestion, as they contain a digestive somewhat similar to pepsin; the fruits are also baked like squash. The flesh is used to flavor ice cream, as a diet for the sick, in fruit salad, and in a number of other dishes, so it is a rather valuable fruit to us."

38293 and 38294.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received May 25, 1914.

38293. CITRUS HYSTRIX DC. Rutaceæ.

"*Cabuyao.* A thorny tree from 6 to 12 meters in height, with a rather dense rounded head, frequently with drooping branches; young growth more or less purplish, smooth; leaves 16 to 24 centimeters long, ovate, acute, smooth, shining, lighter below than above, crenate; petioles 8.5 to 12 centimeters long, broadly winged, the area of the wings frequently exceeding the leaf area; fruit variable, from oblate to pyriform turbinate or oblong, smooth to more or less corrugate, greenish lemon-yellow; rind medium thick; flesh greenish, juicy, sharply acid, aromatic, contained in 12 to 15 locules; juice sacs short and blunt; seeds usually many, flat, reticulate. Malaysia, including the Philippines to India. Like all other Philippine citrus fruits, the *cabuyao* goes under a multiplicity of names, varying with the many tribal languages of the Archipelago and the different forms of the fruit; some of these names are *suha, balincolong, biasong, tibulit, colobot,* etc. Excepting the citron, the *cabuyao* is perhaps less esteemed than any of the better known citrus fruits in the Philippines and can scarcely be said to be cultivated. Some kinds are eaten with fish by the Filipinos and make a fairly good ade. Most forms are also used in cleaning clothes and as a hair wash. The *cabuyao* has scarcely been introduced beyond its native habitat and is seldom seen even in botanical collections. For attractive shape lines certain forms of the *cabuyao* are surpassed by no other citrus fruit. Some of these forms unquestionably will be recognized as subspecies on closer study, or possibly as separate species." (*Wester, Bulletin No. 27, Citriculture in the Philippines.*)

For a further account of the *cabuyao* and related forms see Wester's Citrus Fruits in the Philippines, Philippine Agricultural Review, First Quarter, 1915.

38294. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.
(*Lagerstroemia flos-reginae* Retz.) **Crape myrtle.**

"*Banaba.* One of our most showy forest trees when it is in bloom. The wood is valuable also, very hard, and almost indestructible. It ought to be introduced into Porto Rico and Panama." (*Wester.*)

38295 and 38296. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

From Pungo Andongo, Angola. Presented by Rev. J. C. Wengatz, Methodist Episcopal Mission. Received May 21, 1914. Quoted notes by Mr. Wengatz.

38295. "Black Makunde or '*Makunde ia bafeta.*'"

38296. "Red Makunde or '*Makunde ia kusuku.*'"

38297 and 38298.

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent, Royal Botanic Gardens. Received May 22, 1914.

38297. ATALANTIA CEYLANICA (Arn.) Oliver. Rutaceæ.

38298. PARAMIGNIA MONOPHYLLA Wight. Rutaceæ.

Distribution.—A stout, climbing evergreen shrub, found in India from the Sikkim Himalayas at an altitude of 2,000 to 5,000 feet, southward mostly in the low mountains, to Ceylon.

38299. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

From Calcutta, India. Presented by the Royal Botanic Garden, Sibpur. Received May 21, 1914.

"A small, spiny tree, originally a native of India, now commonly grown in the low country of Ceylon and other tropical countries for its fruit. The latter is globular, and varies in size from that of a cricket ball to a large melon; it has a very hard green shell, inclosing a mass of doughy aromatic pulp, intermingled with which is a limpid glutinous substance, which some people relish for its flavor, but more particularly for its medicinal value. The fruit is a well-known specific for dysentery, and is much used in native medicine. The principal season for it is during the months of February to April. The tree is propagated by seed, and thrives in ordinary soil." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

38300 and 38301. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Alford, Lincolnshire, England. Procured from Mr. S. Brewer through Mr. Charles M. Hathaway, American consul, Hull, England. Received May 19, 1914. Quoted notes by Mr. Brewer.

38300. "*Vitality.* Blight-proof potato. First growth is weak; they will then grow strong and throw a large top. Allow plenty of room. Grown on black fen land."

38301. "*Vitality.* Blight-proof potato. Allow good room; the first growth weak; then they thicken and throw large haulms. Grown on fine soil."

38302 to 38326. HORDEUM spp. Poaceæ. **Barley.**

From St. Petersburg, Russia. Presented by Mr. Robert Regel, Bureau of Applied Botany. Received May 6, 1914.

Reintroduced for the work of Mr. A. G. Johnson, of the University of Wisconsin, on the various species of Helminthosporium and their distribution throughout the barley districts of the world.

38302. HORDEUM sp.

38303 and 38304. HORDEUM DISTICHON NUTANS Schubl.

38302 to 38326—Continued.

38305 and 38306. HORDEUM VULGARE L.

38307. HORDEUM VULGARE L. mixed with *H. distichon nutans* Schubl.

38308 to 38310. HORDEUM VULGARE L.

38311. HORDEUM VULGARE HIMALAYENSE Rittig.

38312. HORDEUM VULGARE L.

38313. HORDEUM VULGARE LEIORRHYNCHUM Koernicke.

Received as *H. vulgare leiorrhynchum nekludowi* R. Regel, described in full in Regel's Glattgrannige Gersten, p. 69–71, 1909.

38314. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

Received as *H. vulgare nigrum daghestanicum* R. Regel, described in Regel, Flaxberger, and Malzeff, The Most Important Forms of Wheat Barleys, etc. (Russian), p. 31, 1910.

38315. HORDEUM VULGARE PALLIDUM Seringe.

Received as *H. vulgare pallidum hibernaculum* R. Regel, op. cit., p. 31.

38316. HORDEUM VULGARE L.

Received as *H. distichum persicum criwanense* R. Regel, Glattgrannige Gersten, p. 75–76, 1909.

38317. HORDEUM DISTICHON ERECTUM Schubl.

38318 and 38319. HORDEUM VULGARE L.

38320. HORDEUM DISTICHON ERECTUM Schubl.

38321. HORDEUM VULGARE L.

38322. HORDEUM VULGARE L.

38323. HORDEUM DISTICHON NUTANS Schubl.

38324. HORDEUM VULGARE L.

38325. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

38326. HORDEUM VULGARE L.

38327. ORYZA SATIVA L. Poaceæ. Rice.

From Dakhleh Oasis, western Egypt. Purchased from Sheik Abu Bakr, through contract made by Prof. S. C. Mason, of the Bureau of Plant Industry, on his visit to the oasis in October, 1912. Received May 20, 1914.

"This rice is a variety grown in the Oases of Khargeh and Dakhleh and there regarded as quite distinct from the so-called valley rice which is used in reclaiming the salty lands in the delta of Lower Egypt.

"Mr. Wright, manager of the Corporation of Western Egypt, at Khargeh, and Sheik Abu Bakr, the chief man of Dakhleh Oasis, both especially recommended this rice as being a valuable crop for reclaiming salty lands. They stated that it can be grown successfully on land quite too strong for barley.

"My idea in bringing this in was not that it would be of sufficient importance to use as a main crop on high-priced irrigated lands, but that it should be given a test as a useful crop in reclaiming lands at present too salty for the growing of alfalfa and barley. Considerable areas of land of this character in the Coachella Valley are accessible to a good flow of artesian water.

"In Dakhleh the land is bordered with quite high ridges and the water kept almost continuously on the rice, it being essential, of course, that there be some wash or lower tract into which the surplus water can be diverted. My idea is that it is this excess of water that really does the chief

38327—Continued.

work of improving the alkaline ground, rather than the rice crop itself; but if a crop of rice can be raised, contributing toward the expense of reclaiming such land and bringing it into condition for usefulness with other crops, the rice certainly justifies itself." (*Mason.*)

38328. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

From Taianfu, Shantung, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Roots received May 27, 1914.

"(No. 1216. March 28, 1914.) A peculiar variety of Chinese winter radish of very mild and sweet taste. Eaten by the people like apples. Promoting an appetite and aiding digestion. Chinese name *Hsiang ch'ing lo po*, meaning 'sweet green root.'" (*Meyer.*)

38329 to 38331.

From Lavras, Minas Geraes, Brazil. Presented by Mr. B. H. Hunnicutt, director, Escola Agricola de Lavras, through Miss Charlotte Kemper. Received May 19, 1914. Quoted notes by Mr. Hunnicutt.

38329. CALOPOGONIUM ORTHOCARPUM Urban. Fabaceæ.

"Leguminous vine, well liked by stock. Popularly known as *Corda de viola*, 'violin chord.' From the farm, Lavras Agricultural School, April 15, 1914.

38330. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

"Seeds from the *Paina* tree that is in the praça in front of our school. The silky fiber in the fruit with the seed is highly appreciated for pillows, fine mattresses, etc. It sells here for from 30 to 40 milreis ($10 to $13) for an arroba, or 15 kilos (33 pounds). The tree is also a very handsome shade tree."

38331. MEIBOMIA sp. Fabaceæ.

"A weed very similar to Florida beggarweed, popularly known as *carapicho;* leguminous plant. From Lavras Agricultural School, Lavras, Minas Geraes, April 15, 1914."

38332. SACCHARUM NARENGA (Nees) Wallich (?). Poaceæ. **Sugar cane.**

From Kaifeng, Honan, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Cuttings received May 27, 1914.

"(No. 1215. March 4, 1914.) Several varieties (mixed) of hardy sugar cane, grown in the vicinity of Kaifeng. They contain a much greater percentage of sugar than the variety obtained under No. 1164 [S. P. I. No. 38257]. To be tested like that number, for sirups, molasses, and sweets for children, and might possibly be a good fodder for milch cows." (*Meyer.*)

38333. PHOEBE NANMU (Oliver) Gamble. Lauraceæ. **Nanmu.**
(*Machilus nanmu* Hemsl.)

From Yachow, Szechwan. Presented by Dr. Edgar T. Shields, West China Baptist Mission. Received May 27, 1914.

For previous introduction, see S. P. I. No. 37944.

38334. PELARGONIUM sp. Geraniaceæ. **Rose geranium.**

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul, who procured them from J. Robillard & Co. Cuttings received May 29, 1914.

"*Malvarrosa*, or rose geranium. This is the variety which yields the geranium oil of commerce." (*Dawson.*)

38335. CITRUS sp. Rutaceæ. **Orange.**

From Yokohama, Japan. Presented by Mr. E. H. Wilson. Received May 6, 1914.

"*Natsu Mikan.* During my recent trip to southern Kyushu I made a collection of the various citrus fruits cultivated here. Among these fruits is an orange with which I am unfamiliar. Its Japanese name is *Natsu Mikan*, and it is said to keep longer than any other variety and to be very sweet at midsummer. It is a light-skinned variety with rather pale flesh, and the skin separates from the flesh as in the pummelo. The tree bears in a small state and the fruit is decidedly handsome in appearance. In February and March it is still on the tree and the flavor is sour and very decidedly bitter. I shall test the fruit again at midsummer to find if it becomes distinctly sweet. Very likely this orange is well known to you, but it occurs to me that sweet oranges at midsummer would find a ready market. If of any interest to you there would be no difficulty in securing a supply of seeds. I think growing plants could also be obtained. Apparently it is as hardy as the navel orange." (*Wilson.*)

"Regarding the so-called 'sweet summer orange,' fruits of which I sent in the spring, I have since eaten this fruit in the summer and unhesitatingly say that the term 'sweet' is a misnomer; sour is the correct word to use, and I do not think there is the remotest possibility of this fruit appealing to the American palate." (*Wilson, in letter dated September 7, 1914.*)

38336. OLEA EUROPAEA L. Oleaceæ. **Olive.**

From Bermuda. Collected by Mr. Peter Bisset, of the Bureau of Plant Industry. Received June 2, 1914.

"Cuttings from an olive that fruits sparingly in Bermuda. For trial in Florida, where soil and climatic conditions are similar, and where the olive does not fruit." (*Bisset.*)

38337 to 38340.

From Tsaochowfu, Shantung, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 27, 1914. Plants of the following; quoted notes by Mr. Meyer.

38337. PRUNUS GLANDULOSA Thunberg. Amygdalaceæ.

"(No. 1192. March 11, 1914.) A shrub of small dimensions, said to be quite ornamental in the spring when in flower. Apparently rare. Chinese name *Yü hua mei.*

"*A.* Has pure white flowers; Chinese name *Pai yü hua mei.*

"*B.* Has rosy flowers; Chinese name *Hung yü hua mei.*

"*C.* Has white flowers dotted with red spots; Chinese name *Hua yü hua mei.*"

38337 to 38340—Continued. (Quoted notes by Mr. F. N. Meyer.)

38338. BUXUS SEMPERVIRENS L. Buxaceæ. **Box.**

"(No. 1194. March 11, 1914.) A broad-leaved variety of box of dense, sturdy growth, apparently fairly hardy. The trees, when getting older, assume umbrellalike shapes and are quite ornamental when seen in old temple yards. Chinese name *Huang ya,* meaning 'yellow bud.'"

Rooted plant.

38339. PAEONIA ALBIFLORA Pallas. Ranunculaceæ. **Peony.**

"(No. 1195. March 11, 1914.) A collection of five rare varieties of herbaceous peonies, among which yellow, green, and black ones are said to occur.

"*A. Hei shao yao,* meaning 'black peony.'

"*B. Chin chan shao yao,* meaning 'golden spreading peony.'

"*C. Lu huang shao yao,* meaning 'reed-yellow peony.'

"*D. Ping ch'ing shao yao,* meaning 'ice-green peony.'

"*E. Kao kan hung shao yao,* meaning 'tall-stem red peony.'

38340. PAEONIA SUFFRUTICOSA Andrews. Ranunculaceæ. **Peony.**
(*Paeonia moutan* Sims.)

"(No. 1196. March 11, 1914.) A collection of 12 rare varieties of tree peonies, among which yellow, blue, green, and black flowering ones are said to occur.

"*A. Lan t'ien mu tan,* meaning 'beautiful sky-blue peony.' Flowers said to be of a deep-blue color.

"*B. Yü kuo t'ien ch'ing mu tan,* meaning 'cleared-up-weather peony.' Flowers said to be of an opaque-blue color.

"*C. Yü i huang mu tan,* meaning 'imperial dress yellow peony.' Flowers said to be of dark-yellow color.

"*D. Chin lun mu tan,* meaning 'golden wheel peony.' Flowers said to be of a bright yellow color.

"*E. Yao huang mu tan,* meaning 'handsome yellow peony.' Flowers said to be of ocher-yellow color.

"*F. Mo chin mu tan,* meaning 'black and gold peony.' Flowers said to be of dark leather-brown color.

"*G. Lü yü mu tan,* meaning 'green-jade peony.' Flowers said to be of a transparent-green color.

"*H. Tou lü mu tan,* meaning 'mung-bean green peony.' Flowers said to be of an opaque-green color.

"*I. Hao pai mu tan,* meaning 'crane-white peony.' Flowers said to be very large and of a brilliant white color.

"*J. Mei jên mien mu tan,* meaning 'handsome woman's-face peony.' Flowers said to be large and of a particularly fine shade of rose color.

"*K. Chuang yüan hung mu tan,* meaning 'superior red peony.' Flowers said to be of a beautiful brilliant red color.

"*L. Tung wu êrh chiao mu tan,* meaning 'Tung wu, doubly beautiful peony.' Flowers said to be large, of variegated color, being white with red spots here and there.

"The soil best suited to these tree peonies is of a loose, porous, sandy loam nature, with perfect drainage and of great depth. In the district to the northwest of Tsaochowfu one finds such soil and climatic conditions as seem to suit this peony to perfection, and the plants are grown there on fields as regular crops and are sent all over eastern China, going as far south as Canton and as far north as Mukden, to be used

38337 to 38340—Continued. (Quoted notes by Mr. F. N. Meyer.)

mainly for forcing purposes. More than 300 varieties are said to be in cultivation here. The best time for transplanting is considered to be September, while propagation is effected through division. The plants require 3½ feet distance in all directions to develop to perfection, while older plants even need to be 4 to 6 feet apart. At the approach of winter these peonies are covered over with some soil, which is taken away again in early March. This saves the flower buds from being winterkilled and reduces danger from damage by men or beasts, as the wood of the tree peony is quite brittle. Possibly an industry could be established in some suitable section of the semiarid southwestern United States, where the tree peony could be grown in large quantities, to supply florists with one of the most decorative flowers for winter forcing purposes."

38341. COPAIVA COPALLIFERA (Benn.) Kuntze. Cæsalpiniaceæ.
(*Copaifera guibourtiana* Benth.)

From Kindia, French Guinea, Africa. Presented by the director of the agricultural station. Received May 25, 1914.

Distribution.—A tree with compound leaves and small flowers in panicled spikes, found in the Sierra Leone region of Upper Guinea. It is called *Kobo* tree by the natives. The wood is odoriferous and furnishes a valuable copal.

38342. PSIDIUM sp. Myrtaceæ. **Guava.**

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received May 25, 1914.

"*Araça cagão.* A native guava, pear shaped and of good size. The flesh is white, and the seeds, though large, are few in number. The tree grows to a height of 20 to 25 feet. The fruit is used principally for jams." (*Wilson Popenoe.*)

38343 to 38353. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

From Perth, West Australia. Presented by Mr. E. A. Cook, Department of Agriculture. Received May 25, 1914.

"These wheats are well-known Australian varieties, almost all of them having been produced by the wheat breeders of the Department of Agriculture of New South Wales, Australia, from which State they were evidently sent to West Australia. These are all soft, or comparatively soft, wheats of the general type grown so abundantly in Australia. They are comparable to the soft, white wheats of the Great Basin and Pacific coast regions of this country. Their principal value to us is for testing in the Southwest under conditions climatically similar to those of Australia. They may also have value as the basis for crossbreeding. (*C. R. Ball.*)

38343. *Alpha.* Medium early.
38344. *Bayah.* Late.
38345. *Bunyip.* Very early.
38346. *Comeback.* Medium early.
38347. *Federation.* Late.
38348. *Firbank.* Very early.
38349. *Florence.* Very early.
38350. *Gluyas Early.* Medium early.
38351. *Steinwedel.* Medium early.
38352. *Warren.* Medium early.
38353. *Yandilla King.* Late.

38354 and 38355. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Sapporo, Japan. Presented by Mr. T. Minami, Professor of Agronomy, Tohoku Imperial University. Received May 28, 1914. Quoted notes by Mr. Minami.

38354. "No. 1. Early ripening. Cultivated in Honshu, the mainland of Japan."

38355. "No 2. Middle ripening. Cultivated in Honshu, the mainland of Japan."

38356 to 38360. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Warsaw, Russia. Presented by Mr. Józef Glisczyński, at the request of Mr. Edouard de Kostecki, Central Agricultural Society in Poland. Tubers received June 3, 1914.

Five varieties of the very best starch, table, and feeding potatoes, exclusively of Polish origin.

"All these varieties take their origin from the well-known potato breeder Henry Dotowski in Nowa Wies, Austrian Poland, and for many years have undergone an excellent and very careful selection at my seed-producing olgri." (*Glisczyński.*)

38356. "*1. Maguola.* First-rate table variety."

38357. "*2. Busola.* Excellent starch potato."

38358. "*3. Olgierd.* Excellent starch potato."

38359. "*4. Faryd.* Excellent starch potato."

38360. "*5. Bohun.* One of the best feeding potatoes."

38361 to 38366. ORYZA SATIVA L. Poaceæ. **Rice.**

From Paramaribo, Surinam. Presented by the director, Department of Agriculture. Received June 1, 1914.

38361. *Boeloeh itum* (Boeloe item).

38362. *Boeloeh poetih* (Boeloeh pitih).

38363. *Ketan item.*

38364. *Moetmoerio* (Moetmoeria).

38365. *Patraka* (*Skrivimas Koti;* Patarka).

38366. *Witte Wanica* (Wittie Wanica).

38367 to 38371. ORYZA SATIVA L. Poaceæ. **Rice.**

From Bangalore, India. Presented by Mr. G. H. Krumbiegel, economic botanist, Mysore Government Botanic Gardens. Received June 1, 1914.

"The growing period is from 120 to 130 days." (*Krumbiegel.*)

38367. *1. Banku paddy.*

38368. *2. Garudan Samba.*

38369. *3. Vallai Kattai.*

38370. *4. Kareyur* or *Pallaiya Samba.*

38371. *5. Muthu Samba.*

38372 to 38398.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, Director of Agriculture, through Mr. Harry H. Boyle, assistant horticulturist. Received May 22, 1914. Plants of the following, quoted notes by Mr. Boyle, unless otherwise indicated.

38372 to 38398—Continued. (Quoted notes by Mr. H. H. Boyle.)

38372. CANARIUM OVATUM Engler. Balsameaceæ. **Pili nut.**

"Trees are found growing in the various islands of southern Luzon, in the Province of Albay. The leaves are compound; the fruit is a triangular drupe, containing one seed. The nuts are eaten quite extensively in the islands and throughout the eastern part of the world. From them an oil is extracted, which is used for the table and also for burning in lamps. This nut is the best I have ever eaten. During the past two years quite a number of shipments of this nut have been made to San Francisco and find a ready market. A gum, that resembles in properties the copaiba balsam, is extracted from the bark."

38373. PASSIFLORA LAURIFOLIA L. Passifloraceæ. **Passion fruit.**

"An edible variety obtained from Mr. P. Morange, director of the Botanic Gardens, Saigon, Cochin China. The fruit is of a bright yellow color, pear shaped, about the size of the ordinary pear tomato, and very similar to it in appearance. A bitter substance, which is being employed to counteract intermittent fever, is extracted from the leaves."

38374. EUPHORIA CINEREA Radlk. Sapindaceæ.

"Undoubtedly a new species, closely allied to the *longan*, found in the mountains of Cavite Province near the town of Silang, Philippine Islands. The trees are 1½ feet in caliper, and from 50 to 60 feet in height. The fruit has a remarkably sweet flavor; the pulp is semitransparent, and is greatly prized by all who eat it."

38375. EUGENIA CUREANII C. B. Robinson. Myrtaceæ.

"Native of the island of Catanduanes, Philippine Islands. Fruits the size of a large cherry, glossy, purplish black in color, borne on the stem near the axil of the leaf in very large clusters. As many as a gallon of fruits have been noted attached to a branch 1½ feet in length. Native name *Egot, Igot,* or *Igut.*"

38376. CARISSA OVATA R. Brown. Apocynaceæ.

"A species introduced from the Botanic Gardens, Sydney, Australia. Spines and foliage much reduced in comparison with the species *arduina.* This variety has not yet fruited or flowered in the Philippines. Greatly valued in Australia for its fruit, as well as its medicinal properties."

38377. ARTOCARPUS ODORATISSIMA Blanco. Moraceæ. **Marang.**

See S. P. I. No. 36256 for previous introduction and description.

38378. STADMANNIA OPPOSITIFOLIA Lam. Sapindaceæ.

"No. 4255."

38379 to 38381. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

"Three of the best fruiting varieties grown in the Buitenzorg Botanic Gardens, Java. These were received at the Bureau of Agriculture, Philippine Islands, without varietal names."

38379. P. I. No. 3651.

38380. P. I. No. 3650.

38381. P. I. No. 3649.

38382. MANGIFERA sp. Anacardiaceæ. **Mango.**

"(No. 3123.) Obtained from the northern part of the island of Palawan by Mr. E. D. Merrill, botanist, Bureau of Science, Philippine Islands. Remarkable for its small seeds and the small amount of fiber. Tree of very large size."

38372 to 38398—Continued. (Quoted notes by Mr. H. H. Boyle.)

38383. DILLENIA PHILIPPINENSIS Rolfe. Dilleniaceæ.

"Native name '*Catmon.*' A very ornamental shade tree indigenous throughout the Philippine Islands. The fruit consists of five distinct united carpels; it is acid and is extensively used by the natives for flavoring fish."

38384. DILLENIA sp. Dilleniaceæ.

"This tree is used throughout the Malay Peninsula as a shade tree. The fruits are used by the natives along with fish. It contains from 5 to 20 cells, the carpels growing together around the fleshy center and surmounted by as many radiating styles, each cell containing numerous seeds surrounded by a gelatinous pulp."

38385. ATALANTIA sp. Rutaceæ.

"Perhaps *Atalantia retusa.* Two plants obtained from Mr. P. Morange, Director of the Botanic Gardens, Saigon, Cochin China. A very interesting type, which perhaps might be of value for plant breeding."

38386. HIBISCUS MUTABILIS L. Malvaceæ.

"A double white-flowering variety. Perhaps the only one of its kind in cultivation. Has the same shaped flower as the *Peachblow* variety. A beautiful ornamental shrub."

38387. MANGIFERA INDICA L. Anacardiaceæ. Mango.

"Var. *mekongensis.* Obtained from the Botanic Gardens, Cochin China. Native name *Xoai thanhca.* One of the best edible varieties grown in the country."

38388. CITRUS sp. Rutaceæ.

"Obtained from Mr. P. Morange, director of the Botanic Gardens, Saigon, Cochin China. A very distinct citrus species which resembles a pomelo both in foliage and in the fruit. Named after the town of Moi in Indo China." Received as *Citrus moi*, for which no place of publication has yet been found.

38389. BELOU MARMELOS (L.) Lyons. Rutaceæ. Bael.
(*Aegle marmelos* Correa.)

"Seedlings of a fruit obtained from a tree grown on the plaza of the largest pagoda in Siam, which is situated in the town of Propatone. As this fruit is of a different type from the ordinary *Aegle marmelos*, it is thought that it might be of some value. The fruit is fully 5 inches in length and 2½ inches in width, more of the melon shape than pyriform."

38390 and 38391. MANGIFERA INDICA L. Anacardiaceæ. Mango.

38390. "*Carabao.* This variety is a native of the Philippines, and is, without doubt, the best mango fruit I have ever eaten. It is indigenous all over the Philippine Islands, principally found growing along the walls of the rice paddies. Rarely cultivated in orchard form."

38391. "*Pico.* To my mind this is the second best mango I have ever eaten. For scarcity of fiber and for excellent flavor it is worthy of this rank. The name *Pico* has reference to the fruit being sharp pointed, resembling a pickax."

38372 to 38398—Continued. (Quoted notes by Mr. H. H. Boyle.)

38392. GARCINIA BINUCAO (Blanco) Choisy. Clusiaceæ. **Batuan.**

"Native name '*Batuan.*' Native of Augusan Province. Might possibly prove a good stock for *Garcinia mangostana.*"

38393. ANACARDIUM OCCIDENTALE L. Anacardiaceæ. **Cashew.**

"A pink-fleshed variety, obtained from Mr. P. Morange, Director of the Botanic Gardens, Saigon, Cochin China."

38394. MANGIFERA VERTICILLATA C. B. Robinson. Anacardiaceæ. **Baúno.**

For previous introduction and description, see S. P. I. No. 34431.

38395. ANACOLOSA LUZONIENSIS Merrill. Olacaceæ. **Galo.**

"A tree 20 to 30 feet in height, resembling in appearance the *Diospyros virginiana.* Produces small fruits the shape of an olive, the kernels of which have the flavor of corn and contain very nourishing properties. Found in the mountains of Cavite near the towns of San Francisco and Silang."

38396. GUSTAVIA GRACILLIMA Miers. Lecythidaceæ.

"A very pretty tree, obtained from Mr. P. Morange, Director of the Botanic Gardens, Saigon, Cochin China."

38397. ANTIGONON GUATIMALENSE Meissn. Polygonaceæ.

"Obtained from the Botanic Gardens, Singapore, Straits Settlements. Flowers more numerous and much larger than *A. leptopus.*"

"A trailing or climbing plant, with slender, angular, pubescent stems, the leaves about 4 by 3 inches, the upper ones smaller, supported on short, terete downy stalks, and of a broadly ovate-oblong form, deeply cordate at the base with two rounded lobes, the apex shortly acuminate. The upper surface is puberulous, the lower softly downy. The flowers are very numerous and borne in tufts along the sides of long racemes or panicles, which terminate in branched tendrils. Each flower is raised on a slender pedicel about three-fourths of an inch long, subtended by an ovate-acute bract about half the length of the pedicel. The calyx, which is the showy part of the flower, has five membranous segments; the three outer are of a beautiful rosy pink color about 1 inch in length by rather less in breadth, cordate at the base, oblong, rounded toward the apex, which terminates in a very short deltoid point. Within these are two other sepals of about the same length as the outer ones, but much narrower, falcate, lanceolate, apiculate. Within these sepals are eight stamens of unequal length, united into a short tube at the base surrounding the 3-cornered ovary, but above free. The fruit exceeds the stamens in length, and is terminated by the remains of three styles, each surmounted by a capitate stigma. Messrs. Shuttleworth and Carder speak in the most glowing terms of the beauty of this plant, and the specimens they have brought certainly confirm their good opinion. It is much the finest *Antigonon* known to us." (*M. T. Masters, in Gardeners' Chronicle, ser. 2, vol. 7, p. 780, 789, 1877.*)

39398. CANARIUM OVATUM Engler. Balsameaceæ. **Pili nut.**

38399 to 38404.

From Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 9 and 10, 1914. Quoted notes by Mr. Cook.

38399 to 38404—Continued. (Quoted notes by Mr. O. F. Cook.)

38399. COLLINIA sp. Phœnicaceæ. **Palm.**

"A small species with narrow pinnæ and slender, short-jointed trunk. A few plants were introduced several years ago and have been found very well suited to household cultivation."

38400 to 38402. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

"The avocado season is much too far along to do satisfactory work. In most places the season is completely over, but at these higher altitudes a few fruits are still in the market, as yet none of a quality to particularly recommend them. But I see one thing clearly, that it is the late varieties of these countries that we want. The early varieties ripen in August and September, the others in December, etc., and as the colder places are reached the crop goes around into the spring months."

38400. "From Purulha, Department of Bajo Verapaz, Guatemala. Cuttings from a tall, slender tree, 30 feet high, growing in the garden of Señor Ernesto Avouet, at Purulha; altitude, 5,000 feet. A large, round, hard-shelled, small-seeded type, without fruit at this time (May 25), but said to be one of the very best in this vicinity."

38401. "From Coban, Department of Alta Verapaz, Guatemala. *Dieseldorff* No. 2. Scions from a tree bearing large, oval, hard-shelled fruit with reddish flesh. Without fruit at this time (May 22.) Growing in garden of Señor Dieseldorff, at Coban; altitude, 4,300 feet. Fruit said to be of superior quality."

38402. "From Coban, Department of Alta Verapaz, Guatemala. *Dieseldorff* No. 3. Round shaped fruit, flesh yellowish green, large proportion of flesh, rather small seed, very tough, thick shell. Scions from a large spreading tree 50 feet tall, growing in garden of Señor Dieseldorff, at Coban; altitude, 4,300 feet. At this time (May 22) the tree carried a large crop of mature fruit."

For an illustration of Guatemalan avocado fruits, see Plate IX.

38403 and 38404. CHAMAEDOREA sp. Phœnicaceæ.
"Pacaya" salad palm.

"From Coban, Department of Alta Verapaz, Guatemala. Collected at an elevation of 4,300 feet. A large species, with a large fleshy edible inflorescence, used as a cooked vegetable or as a salad.

"Pacaya palms are grown here in great abundance, so that any amount of seed could be obtained. Some of the palms have four, five, and even six pacayas, as the edible male inflorescences are called, so that we did not overestimate the amount of fruit that might be produced in a successful planting. I feel confident that the palms would grow very well in sheltered situations in southern Florida, or I would suggest that a planting be made in the slat house at Miami, with the idea of leaving some of the palms to grow to maturity. They attain a height of 12 to 15 feet, but fruit much younger, possibly in the third or fourth year."

38403. Small seedling plants. 38404. Collected May 22, 1914.

38405 to 38407.

From Zaria, Northern Nigeria. Presented by Mr. P. H. Lamb, director, Department of Agriculture. Received June 1, 1914.

"These varieties are crops which occupy the land for about five months in Nigeria, and the seed was obtained from Bornu, where it matured last season with a rainfall of 10 to 20 inches. The soil on which they were grown is, generally speaking, a light sandy loam, and the yield per acre here generally varies between 300 and 600 pounds of clean corn per acre." (*Lamb.*)

38405 and 38406. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

38405. *Kaura.* 38406. *Jan dawa.*

38407. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

"*Maiwa.*"

38408 to 38414.

From Novospasskoe, Russia. Presented by Mr. A. Woeikoff, director, Bureau d' Acclimatation. Received May 18, 1914.

38408. AMYGDALUS PEDUNCULATA Pallas. Amygdalaceæ.
(*Prunus pedunculata* Maxim.)

Seeds from M. M. Timogovich, Tchita, Transbaikalia. See S. P. I. No. 37559 for previous introduction.

38409. PICEA OBOVATA Ledeb. Pinaceæ. **Fir.**

Seed from the Provinces of Transbaikalia and Jakutsk. See S. P. I. Nos. 20319 and 36729 for previous introductions and description.

"In its general appearance this species bears a considerable resemblance to the common spruce, having similar leaves and very downy young shoots. It is, however, distinct in the cones, which are smaller (about 3 inches long) and have the scales rounded and entire at the apex (not jagged as in *P. excelsa*). It is widely spread in Siberia and northeast Russia, and in places reaches a stature of 100 feet; valuable in supplying timber and fuel in cold, inclement regions. It has little garden value, being less to be preferred than the common spruce." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 160.*)

38410. PRUNUS PADUS L. Amygdalaceæ.

Var. *sibirica.* Seed from the Provinces of Transbaikalia and Jakutsk.

38411 and 38412. RIBES spp. Grossulariaceæ. **Currant.**

38411. RIBES DIKUSCHA Fisch.

Var. *appendiculatum.* Seed from the Provinces of Transbaikalia and Jakutsk.

38412. RIBES DIACANTHA Pallas.

Seed from the Provinces of Transbaikalia and Jakutsk.

Distribution.—A bush bearing oblong, golden-red currants, found in the Altai and Transbaikal regions of Siberia, in Songaria, and in Mongolia.

"A deciduous shrub, 4 to 6 feet high, armed with spines in pairs one-eighth to one-fifth of an inch long, or sometimes unarmed; young shoots not downy. Leaves obovate or rounded, often 3-lobed, the lobes coarsely toothed, three-fourths of an inch to 2 inches wide,

38408 to 38414—Continued.

the base ordinarily wedge shaped but sometimes rounded, quite smooth; stalk one-fourth to five-eighths of an inch long, more or less furnished with bristles. Flowers unisexual, the sexes on different plants. Males yellowish in erect glandular racemes. Fruit roundish oval, about as big as a red currant, smooth, scarlet red. Native of Siberia, Manchuria, etc.; introduced in 1781. This shrub, which has no particular merit, resembles *R. alpinum* in the plants being 1-sexed, but differs in having prickles and in the markedly wedge-shaped leaves. In having spines and flowers in racemes, it unites the characters of the currants and gooseberries, but its affinities are with the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

Introduced for breeding purposes.

38413. Rhododendron dauricum L. Ericaceæ.

Seed from the Provinces of Transbaikalia and Irkutsk.

"This rhododendron is a native of Dahuria, Mandshuria, and Sachalin, and, coming from a cold region, a spell of mild weather in midwinter causes it to begin to open its flowers very early in this country [England]; therefore they often fall a prey to frost before they can expand. Nevertheless, it is a good kind of plant, for in those seasons when it does escape injury it adds a brilliant touch of color to the garden at a very dull season. There are several forms of the plant, some having deciduous leaves, and in other cases the leaves are evergreen or subevergreen." (*The Garden, January 11, 1913, p. 18.*)

"A deciduous or semievergreen shrub up to 6 feet in height; young shoots scaly and downy. Leaves oval, rounded at the apex, tapering or rounded at the base, half an inch to 1½ inches long, one-fourth to five-eighths of an inch wide, dark glossy green and slightly scaly above, paler and scaly beneath. Flowers bright rosy purple, 1 to 1½ inches across, produced during January and February singly from each one of a cluster of scaly buds at the end of the previous summer's growth, where there are usually but one or two flowers open at a time. Corolla flat, saucer shaped; calyx lobes five, short." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 352.*)

38414. Larix kurilensis Mayr. Pinaceæ. **Larch.**

Seed from the Provinces of Primorskaya and Sakhalin.

See S. P. I. No. 35171 for previous introduction and description.

38415. Lotus tetragonolobus L. Fabaceæ.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received June 9, 1914.

Distribution.—The countries bordering on the Mediterranean from Spain through Italy and the Balkan peninsula to the Transcaucasian Provinces of southeastern Russia, and in northern Africa.

38416 to 38427.

From Novospasskoe, Russia. Presented by Mr. A. Woeikoff, director, Bureau d'Acclimatation. Received May 16–18, 1914.

38416 to 38418. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

38416 to 38427—Continued.

Seed of peaches cultivated by the natives of Turkestan and northern Persia.

38416. *Rugani Gau.* 38418. Var. *1.*

38417. *Pastack Shaftaly.*

38419. CATALPA BUNGEI Meyer. Bignoniaceæ.

See S. P. I. Nos. 16914 and 22578 for previous introductions.

Seed from the Caucasus by Mr. G. I. Strunnikoff.

"A tree 20 to 30 feet high, of bushy habit. Leaves 2 to 7½ inches long, 1½ to 4½ inches wide, ovate or somewhat triangular, with a wedge-shaped or straightly cut base, sometimes entire, but often coarsely scalloped, so as to form 1 to 6 large teeth on each side, mostly on the lower half, quite smooth at maturity; stalk one-half to two-thirds as long as the blade. Flowers not yet seen in this country, but described as 'white and purple'; they are produced 3 to 12 together in a flattish corymb. Corolla 1½ inches long and wide. Native of China, and evidently frequent in the neighborhood of Pekin. Although the true species was only introduced in 1905, through Prof. Sargent, plants under the name have long been in cultivation; these, however, are nearly always *C. bignonioides* var. *nana*, but sometimes *C. ovata*. The true *C. bungei* is still very rare. Of its ornamental qualities little can yet be said, but as represented by dried specimens at Kew, its inflorescence is small. Its quite smooth leaves distinguish it from other cultivated species except the new *C. duclouxii* (which is said to have pale-pink flowers with deeper spots)." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 312.*)

38420. DAPHNE CAUCASICA Pallas. Thymelæaceæ.

Seed from the Caucasus by Mr. G. I. Strunnikoff.

See S. P. I. No. 30573 for previous introduction.

"A deciduous shrub, up to 4 feet high, with flowering twigs downy; barren young twigs less so or smooth. Leaves produced oftener rounded than tapered at the apex, 1 to 1¾ inches long; one-third to half an inch wide; smooth, pale green above; somewhat glaucous beneath. Flowers glistening white, fragrant, produced during May and June in terminal heads of usually 4 to 12 blossoms; the perianth one-third of an inch across, with ovate lobes; tubes one-third of an inch long, cylindrical, silky outside; ovary slightly downy. Native of the Caucasus; many times introduced and lost. It has no great merit, but is pleasing in its fragrance and for its abundant flower clusters borne at the end of crowded, short, leafy shoots springing from the previous year's growth. It thrives exceedingly well at Warley Place, where there are rounded bushes 4 feet high. It differs from *D. alpina* in its smooth leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 468.*)

38421 to 38426. PRUNUS spp. Amygdalaceæ.

Seed from the Caucasus by Mr. G. I. Strunnikoff.

38421 to 38424. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider.

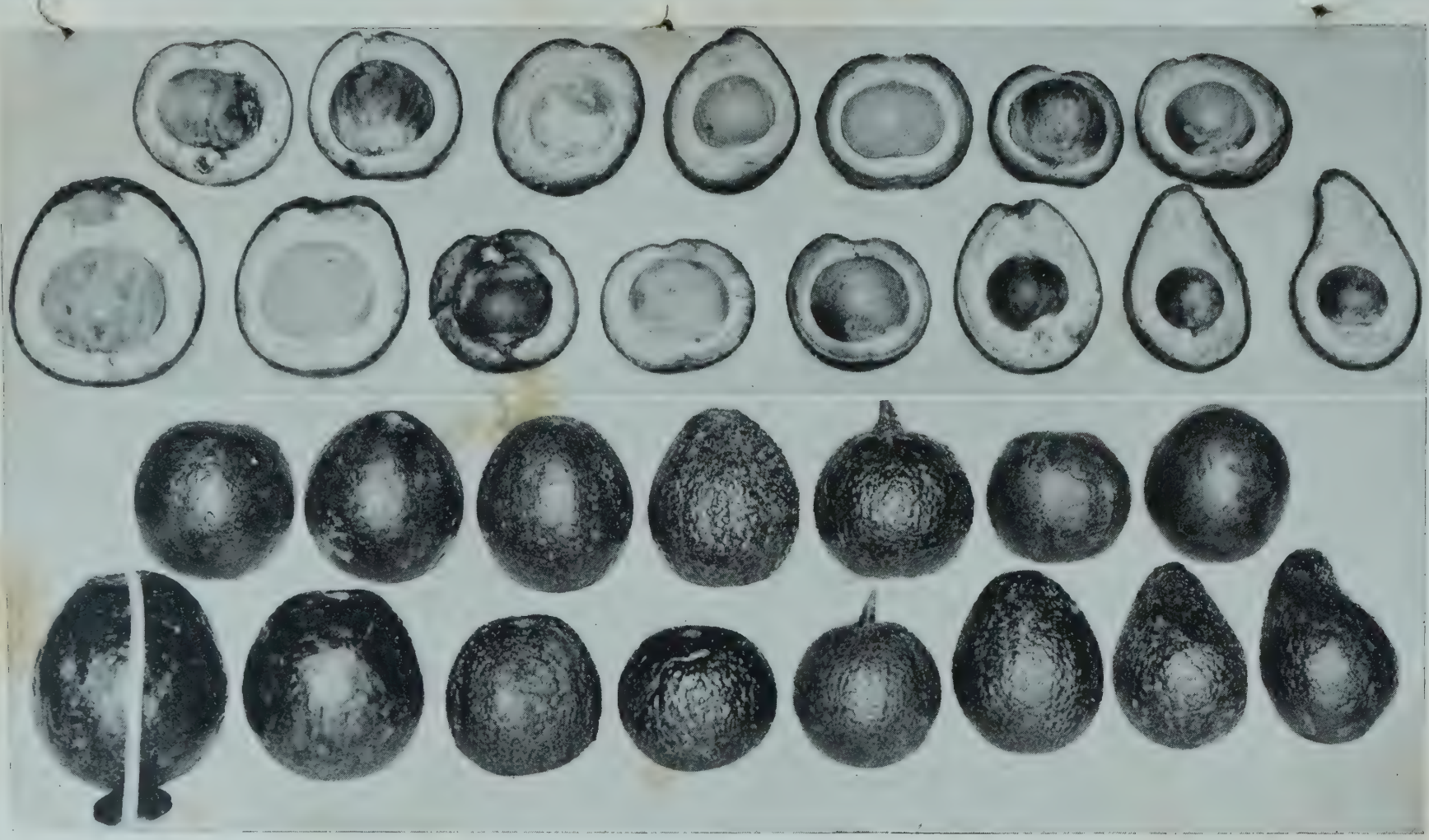
38421. Var. *flava*. See S. P. I. No. 38157 for description of the subspecies.

38422. Var. *macrocarpa*. 38424. Var. *hortensis flava*.

38423. Var. *nigra macrocarpa*.

38425. PRUNUS PROSTRATA Labill. Bush cherry.

See S. P. I. Nos. 28945, 30564, and 37642 for previous introductions.



GUATEMALAN AVOCADO FRUITS (PERSEA AMERICANA MILLER), S. P. I. NOS. 38400 TO 38402. COLLECTED BY THE O. F. COOK EXPEDITION TO GUATEMALA IN 1914.

Although taken late in the season, when most of the fruit was gone, this illustrates the great variety of size, roughness of exterior, thickness of shell, and relative proportion of seed to fruit of these important winter-ripening avocados, which are beginning to attract the attention of orchardists in Florida and California because of their good quality, hardiness, and remarkably thick shells, which make them excellent shippers. (Photographed by C. B. Doyle at the city of Guatemala, June 1, 1914; P16523CA and P16527CA.)

THE GREEN SAPOTE (ACHRADELPHA VIRIDIS (PITTIER) O. F. COOK), S. P. I. NOS. 38478 TO 38481.

A Guatemalan fruit much superior to and hardier than the true sapote (*Achradelpha mammosa*) and much more likely to be of value in the United States. The tree is large and vigorous, with dense, handsome, deep-green foliage, not unlike the magnolia. The fruit is of good texture and flavor, and most nearly resembles a good Japanese persimmon, but with no trace of astringency. The taste is like that of the sapodilla (*Achras zapota*), but the fruit does not soften so much with maturity and the flesh is not granular like that of the sapodilla. (Photographed at Coban, Guatemala, by O. F. Cook, May 19, 1914; natural size; P16479CA.)

38416 to 38427—Continued.

38426. PRUNUS SPINOSA MACROCARPA Wallroth. **Sloe.**

A large-seeded form of the sloe, which W. J. Bean (*Trees and Shrubs Hardy in the British Isles, vol. 2, p. 253–254*) describes as "a deciduous, suckering shrub 10 to 15 feet high, or in gardens a small tree; bark of young shoots downy, many short branches terminated by a spine. Leaves varying from obovate to oval and ovate, three-fourths of an inch to 1¾ inches long, one-half to three-fourths of an inch wide, sharp toothed, downy beneath on the midrib and veins, becoming sometimes quite glabrous with age. Flowers produced in March or early April, usually on the naked wood, singly, sometimes in pairs, from the previous year's buds, each one-half to three-fourths of an inch across, pure white, and borne on a smooth stalk one-fifth of an inch long. Fruit round, half an inch in diameter, at first blue, then shining black, very harsh to the taste. The sloe is found wild in Britain and other parts of Europe as well as in north Asia. It occurs in hedgerows and in woods, where it is occasionally a tree over 20 feet high. It is oftenest seen in wild places or poor soils as a scrubby bush. The wood of the species is very hard and prized in rural districts for making hayrake teeth."

38427. PTEROCARYA FRAXINIFOLIA (Lam.) Spach. Juglandaceæ.
(*Pterocarya caucasica* C. A. Meyer.) **Caucasian walnut.**

See S. P. I. Nos. 27768 and 30809 for previous introductions. Seed from the Caucasus sent by Mr. G. I. Strunnikoff.

"A large deciduous tree, ultimately 80 to 100 feet high, usually much less in this country (England) and branching low down, forming a wide-spreading head; trunk of large trees 10 to 12 feet in girth, with deeply furrowed bark; ends of young shoots minutely scurfy. Leaves 8 to 18 inches (sometimes over 2 feet) long, composed of from 3½ to 13½ pairs of leaflets; these are stalkless, oblong, obliquely rounded at the base, pointed, toothed, normally 2 to 4½ inches long by three-fourths of an inch to 1¾ inches wide (occasionally, on vigorous shoots, 8 or 9 inches long); dark green, smooth and glossy above, tufted with stellate hairs along the midrib beneath; common stalk round. Male catkins 3 to 5 inches long, cylindrical, the flowers closely packed; female catkins 12 to 20 inches long, with the flowers scattered; both pendulous; afterwards developing nuts which, with the wings, are three-fourths of an inch in diameter, roundish, oblique, horned at the top. Native of the Caucasus and Persia, inhabiting moist places. It was introduced to France by the elder Michaux, who took back seeds from Persia in 1782. According to Elwes, the finest specimen in Britain is at Melbury, in Dorset, which is 90 feet high and 12 feet in girth of trunk. There is a beautiful specimen at Claremont, Surrey, which, when I saw it in 1910, measured 19 feet around its short, rugged trunk. The tree likes a rich, loamy soil and abundant moisture, and whilst the fine specimens mentioned above show that it will thrive very well in the south of England, it loves more sunshine than our climate affords. The lover of trees will find nothing more interesting in and around Vienna than the magnificent examples of Pterocarya. There, of course, the summers are much hotter and the winters colder than ours; the tree bears fruit freely and is very striking in late summer when hung with the long, slender catkins." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 261–262.*)

38428 to 38434. Cocos nucifera L. Phœnicaceæ. **Coconut.**

From Pago Pago, American Samoa. Presented by Commander C. D. Stearns, Governor of American Samoa. Received May 25, 1914.

Notes by Commander Stearns, except that the meaning of the native names is given by Mr. W. E. Safford.

38428. (4) *Niu Afa.* Cordage coconut. A good tree but the nuts are mostly picked green, owing to the fact that the husk is considered of more value by the natives in the manufacture of sinnet, which is used as a binding twine in the construction of Samoan houses.

38429. (2) *Niu Ui.* Dark-colored coconut. This has a very thick kernel and the trees yield from 80 to 100 nuts per year.

38430. (1) *Niu Mea.* Ordinary coconut. This has a very thick kernel and the trees yield from 80 to 100 nuts per year.

38431. *Niu Vai.* Water-bottle coconut.

38432. (5) *Niu Lea.* Fine-flavored coconut. A tree that seldom grows over 8 to 10 feet high, producing a large nut; the kernel is better suited for confectionery purposes than for copra. The Samoan coconut has a very high value in the copra market.

38433. *Niu Nai.* Select, or choice coconut.

38434. (3) *Niu Kea.* Pale-leaf coconut. This has a very thick kernel and the trees yield from 80 to 100 nuts per year.

38435 to 38472.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received June 8, 1914. Quoted notes by Mr. Meyer.

38435 and 38436. Lentilla lens (L.) W. F. Wight. Fabaceæ. (*Lens esculenta* Moench.) **Lentil.**

38435. "(No. 2014a. Sianfu, Shensi, China. January 24, 1914.) A small variety of lentil, much grown as a winter field crop all through the milder sections of the Provinces of Honan, Shansi, Shensi, and Kansu; also much planted as a ground cover in persimmon orchards and among other fruit trees. The seeds are sown in the fall after the other crops have been harvested; they germinate quickly, but make little growth during the winter months. In spring, however, they shoot up rapidly and in June they are harvested, after which winter wheat or short-seasoned soy beans, mung beans, or other quick-maturing crops are sown. Chinese name *Tsa pien tou,* meaning 'mixed flat beans.' This lentil deserves a trial as a winter crop among citrus orchards and other fruit trees in the mild-wintered sections of the United States."

38436. "(No. 2015a. Puchowfu, Shansi, China. February 10, 1914.) A larger variety of lentil; otherwise the same remarks apply to it as to the preceding number [S. P. I. No. 38435]. The lentil might possibly also be grown as a summer crop in the intermountain sections, either for forage purposes or for human food."

38437. Vicia faba L. Fabaceæ. **Horse bean.**

"(No. 2016a. Sianfu, Shensi, China. January 24, 1914.) A variety of horse bean grown as a winter garden crop in the milder parts of

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

Shensi. The beans are planted in the fall, make but little growth during the winter, but in spring they make an astonishingly rapid growth and the green beans are one of the earliest vegetables on the markets. Of value as a garden or field crop for the mild-wintered sections of the United States, especially in the West and Southwest; possibly also for the intermountain sections. Chinese name *Hsiao ts'an tou*, meaning 'small silkworm bean,' referring to the silky lining of the green pod."

38438 to 38440. PISUM spp. Fabaceæ. **Pea.**

From Sianfu, Shensi, China. Collected January 24, 1914.

38438 and 38439. PISUM SATIVUM L.

38438. "(No. 2017a.) A small yellow variety of garden pea, much grown as a winter crop throughout the milder sections of Shantung, Honan, Shansi, Shensi, and Kansu, and especially utilized as a cover crop in persimmon orchards. To be utilized in America like Nos 2014a and 2015a [S. P. I. Nos. 38435 and 38436]. Chinese name *Huang wan tou*, meaning 'yellow pea bean.'"

38439. "(No. 2018a.) A variety of garden pea, somewhat different from No. 2017a [S. P. I. No. 38438]; but the same remarks apply to it."

38440. PISUM ARVENSE L. **Field pea.**

"(No. 2019a.) A variety of field pea grown in immense quantities as a winter crop all through the milder parts of north-central China. The roughly broken peas form the main food, when mixed with moistened, chopped-up straw, for all the hard-working farm animals. For possible uses see remarks under Nos. 2014a and 2015a [S. P. I. Nos. 38435 and 38436]. Chinese name *Hei wan tou*, meaning 'black pea bean.'"

38441 to 38446. PHASEOLUS spp. Fabaceæ. **Bean.**

38441. PHASEOLUS CALCARATUS Roxb.

"(No. 2020a. Kwanyintang, Honan, China. December 20, 1913.) A rare variety of bean used in soups as a human food, also being mixed with chopped and moistened straw and fed to domestic animals. Chinese name *Wan tou*, meaning 'pea bean.' This bean is said to be very prolific, and it does not require a long season to mature."

38442 and 38443. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

38442. "(No. 2021a. Sianfu, Shensi, China. January 24, 1914.) A large, white variety of adzuki bean used boiled in soups, for bean-sprout production, and when ground up and mixed with sugar as a stuffing in certain cakes. Chinese name *Pai hsiao tou*, meaning 'white small bean.'"

38443. "(No. 2022a. Lintung, Shensi, China.) A mixed lot of adzuki beans, consisting of several distinct varieties. Used like No. 2021a [S. P. I. No. 38442], being also sparingly fed to domestic animals. Chinese name *Tsa hsiao tou*, meaning 'mixed small beans.'"

38444 and 38445. PHASEOLUS VULGARIS L. **Bean.**

From Sianfu, Shensi, China. Collected January 24, 1914.

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

38444. "(No. 2023a.) A red-seeded variety of garden bean much grown as a vegetable around Sianfu. Of value possibly for semiarid climes. Chinese name *Hung yün tou*, meaning 'red garden bean.'"

38445. "(No. 2024a.) A white-and-red speckled variety of garden bean much grown around Sianfu. Of value, like No. 2023a [S. P. I. No. 38444]. Chinese name *Hua yün tou*, meaning 'mottled garden bean.'"

38446. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. **Adzuki bean.**

"(No. 2025a. Sianfu, Shensi, China. January 24, 1914.) A large red variety of adzuki bean, used in all ways like No. 2021a [S. P. I. No. 38442.] Chinese name *Hung hsiao tou*, meaning 'red small bean.'"

38447 to 38449. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

38447. "(No. 2026a. Sianfu, Shensi, China. January 24, 1914.) Mixed varieties of cowpeas, eaten as human food. Chinese name *Tsa chiang tou*, meaning 'mixed cowpea.'"

38448. "(No. 2027a. Lingpau, Honan, China. December 24, 1913.) A red-seeded variety of cowpeas, rare. Used like No. 2026a [S. P. I. No. 38447]. Chinese name *Hung chiang tou*, meaning 'red cowpea.'"

38449. "(No. 2028a. Sianfu, Shensi, China. January 24, 1914.) A variety of cowpea, being white with a black 'eye.' Used like Nos. 2026a and 2027a [S. P. I. Nos. 38447 and 38448]. Chinese name *Yang yen pai chiang tou*, meaning 'sheep's-eye white cowpea.'"

38450 to 38462. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

38450 and 38451.

From Sianfu, Shensi, China. Collected January 24, 1914.

38450. "(No. 2029a.) A large variety of yellow-seeded soy bean. Chinese name *Ta huang tou*, meaning 'large yellow bean.'"

38451. "(No. 2030a.) A medium-large variety of yellow-seeded soy bean. Chinese name *Ta huang tou*, meaning 'large yellow bean.'"

38452. "(No. 2031a. Puchowfu, Shansi, China. February 10, 1914.) A large, yellow-seeded variety of soy bean. Chinese name *Ta huang tou*, meaning 'large yellow bean.'"

38453 to 38457.

From Sianfu, Shensi, China. Collected January 24, 1914.

38453. "(No. 2032a.) A small, yellow-seeded variety of soy bean. Chinese name *Hsiao huang tou*, meaning 'small yellow bean.'"

38454. "(No. 2033a.) A small, yellowish seeded variety of soy bean. Chinese name *Huang tou*, meaning 'yellow bean.'"

38455. "(No. 2034a.) A very small, yellow-seeded variety of soy bean. Chinese name *Hsiao huang tou*, meaning 'small yellow bean.'"

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

38456. "(No. 2035a.) A variety of soy bean with light-green seeds. Chinese name *Ch'ing tou*, meaning 'green bean.' Used pickled in brine as appetizers with meals."

38457. "(No. 2036a.) A variety of soy bean with dark-green seeds. Used like No. 2035a [S. P. I. No. 38456]. Chinese name *Ch'ing tou*, meaning 'green bean.'"

38458. "(No. 2037a. Kwanyintang, Honan, China. December 20, 1913.) A rare variety of soy bean, of dark olive-drab color. Said to be very productive. Chinese name *Huai tou*."

38459. "(No. 2038a. Lingpao, Honan, China. December 24, 1913.) A rare local variety of soy bean, having reddish seeds. Chinese name *Ta tzŭ tou*, meaning 'large violet bean.'"

38460 to 38462.

From Sianfu, Shensi, China. Collected January 24, 1914.

38460. "(No. 2039a.) A black-and-brown striped variety of soy bean, used mainly roasted as a delicacy. Chinese name *Hu p'i tou*, meaning 'tiger-skin bean.'"

38461. "(No. 2040a.) A large, black-seeded variety of soy bean. Chinese name *Ta hei tou*, meaning 'large black bean.'"

38462. "(No. 2041a.) A small, black-seeded variety of soy bean, used mainly boiled as a feed for hard-working draft animals. Chinese name *Hsiao hei tou*, meaning 'small black bean.'"

38463. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Puchowfu, Shansi, China. Collected February 10, 1914.

"(No. 2042a.) A vigorous variety of kaoliang, producing long, strong stems, much employed in building the poorer kinds of dwellings. The grains are used for distilling purposes and as feed for animals. Chinese name *Hung kao liang*, meaning 'red kaoliang.'"

38464. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Linchinhsien, Shansi, China. Collected February 11, 1914.

"(No. 2043a.) An alfalfa extensively grown here and there on fairly alkaline soils. The young sprouts are eaten by the people as a vegetable. Chinese name *Mu hsü*, meaning 'wooden beard.'"

38465. TRIGONELLA FOENUM-GRAECUM L. Fabaceæ. **Fenugreek.**

From Sianfu, Shensi, China. Collected January 24, 1914.

"(No. 2044a.) A legume grown as a winter vegetable around Sianfu; tastes slightly bitter. Chinese name *K'u t'ou tzŭ*, meaning 'bitter head.' Of value possibly as a winter-forage plant for the mild-wintered sections of the United States."

38466. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Sianfu, Shensi, China. Collected January 24, 1914.

"(No. 2045a.) A variety of hemp, said to produce very strong fiber. Chinese name *Ma tzŭ*, meaning 'hempseed.'"

38435 to 38472—Continued. (Quoted notes by Mr. F. N. Meyer.)

38467 and 38468. PINUS ARMANDI Franchet. Pinaceæ. **Pine.**

38467. "(No. 2046a. Tungkwanhsien, Shensi, China. December 26, 1913.) Edible pine seeds, coming from the Tsin Range. Chinese name *Sung tzŭ*, meaning 'pine seeds.'"

38468. "(No. 2047a. Tahuashan, Shensi, China. December 29, 1913.) A pine, growing to medium size only; produces very large cones, full of large edible seeds, which are eagerly collected by the priests in the temples, while the cones supply an excellent fuel. Occurs on somewhat sheltered spots at altitudes of 5,000 feet and over."

38469. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Feicheng, Shantung, China. Collected March 26, 1914.

"(No. 2048a.) A very large clingstone peach of which grafted trees and scions are sent under No. 1213 [S. P. I. No. 38178]."

38470. AMYGDALUS PERSICA PLATYCARPA (Decne.) Ricker. Amygdalaceæ. **Flat peach.**

"(No. 2049a.) A large variety of flat peach, said to be of light-red color, while being very juicy and sweet. Chinese name *Ta hung pien t'ao*, meaning 'large red flat peach.'"

38471 and 38472. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

38471. From Weichutchien, south of Sianfu, Shensi, China. Collected January 22, 1914.

"(No. 2050a.) A Chinese variety of walnut of quite elongated shape, said to be grown in the Tsin Range."

38472. From Peking, China. Collected April 17, 1914.

"(No. 2051a.) A peculiar walnut with strangely deep grooves and markings, highly prized by the Chinese, who use them in pairs to fumble with in their hands to keep the finger muscles limber. Said to grow in the mountains to the north of Peking. Possibly a hybrid between *Juglans regia* and *J. mandchurica*. Chinese name *Shan ho t'ao*, meaning 'mountain walnut.'"

38473 to 38476. COIX spp. Poaceæ. **Job's-tears.**

From the northern Shan States, Burma. Presented by Mr. H. G. Carter, Economic Botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received April 20, 1914. Quoted notes by Mr. Carter.

For detailed information, see Sir George Watt's account of Coix, published in the Agricultural Ledger No. 13, of 1904.

38473. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf.

"Forma 2. No. 3b193, edible."

38474. COIX LACRYMA-JOBI L.

"Var. *typica*. No. 3b194. The typical Job's-tears."

38475. COIX LACRYMA-JOBI GIGANTEA (Koen.) Stapf.

"No. 3b196."

38476. COIX LACRYMA-JOBI L.

"Var. *typica*. No. 3b194. The typical Job's-tears."

38477. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Coban, Department of Alta Verapaz, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 10, 1914.

"*Dieseldorff* No. 1. Scions from a large spreading tree, 30 feet high, in the garden of Señor Dieseldorff at Coban; altitude 4,300 feet. Fruit oval, hard shelled, small at this time (May 22). Flesh firm, smooth; seed medium large." (*Cook.*)

For further description, see S. P. I. Nos. 38400 to 38402.

38478 to 38481. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook. (*Calocarpum viride* Pittier.) Sapotaceæ. **Injerto.**

From Coban, Department of Alta Verapaz, Guatemala; altitude 4,300 feet. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry, May 22, 1914. Received June 9–10, 1914.

"Another find not properly appreciated heretofore is the green sapote, *injerto* (Spanish) or *raxtul*, as the Kekchi Indians call it. This was described recently by Pittier as *Calocarpum viride*, but the generic name is a homonym and I have proposed *Achradelpha* to replace it. This new species *Achradelpha viridis* is a much finer tree than the true sapote, and apparently much better adapted to a cool climate. The foliage is much heavier than that of the sapote and of a deeper green color; in form and general appearance not very unlike that of the loquat, but the trees grow to a large size and are very handsome. They take the place of the sapote altogether at the higher altitudes around Coban, where they thrive at elevations of 3,000 to 6,000 feet, though both trees are found in the Senshu and Cajabon districts. The failure of the sapote to thrive in Florida need not exclude the green sapote, and a trial planting will be in order. The seeds are like those of the true sapote, but smaller and in some varieties much shorter. The fruits of this green sapote run through a series of different forms, about the same as those of the sapodilla, from long, pointed, oval to short, broad, and flat or concave at the base. The fruit is of good texture and flavor, and the taste is like that of the sapodilla (*Achras zapota*), but the fruit does not soften so much with maturity and the flesh is not granular like that of the sapodilla. The quality of the flesh is distinctly superior to that of the true sapote and much more likely to please the American palate. Anybody who likes papayas or Japanese persimmons might be expected to think favorably of the green sapote, as it comes distinctly into the same class of sweetish, smooth, tender, pulpy fruits. There is no astringency or unpleasant aftertaste whatever, so that none of the curing difficulties of the persimmons would be encountered. On the outside the fruits are a pleasing yellowish green color, more or less russeted at either end. The flesh inside is yellow, but with a reddish or brownish tinge, not as yellow as some of the Japanese persimmons nor as dark as others. There are many varieties of the green sapote in Guatemala, those of the Coban district being distinctly superior to those found in the markets of the city of Guatemala." (*Cook.*)

38478. (No notes.)

38479. Small, heart shaped.

38480. Large, top shaped.

38481. Heart shaped.

For an illustration of the fruit of the green sapote, see Plate X.

38482. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From Sunnylands, Bermuda. Presented by Mr. Theodore Outerbridge, through Mr. Peter Bisset, of the Bureau of Plant Industry. Received June 9, 1914.

"Cuttings of a variety bearing annually about 50 staminate flowers to one pistillate; therefore it should prove a valuable pollinator for planting in orchards of kaki persimmons, if the plants maintain this feature, as up to the present time a great loss in fruit is incurred yearly in these orchards from lack of pollination. The fruit borne by the parent tree is said to be of good size and quality." (*Bisset.*)

38483. DIOSPYROS DISCOLOR Willd. Diospyraceæ. **Mabola.**

From Hamilton, Bermuda. Presented by Mr. T. M. Dill, through Mr. Peter Bisset, of the Bureau of Plant Industry. Received June 9, 1914.

"Scions from a tree growing in the garden of Mr. T. M. Dill, Hamilton, Bermuda." (*Bisset.*)

38484 and 38485. HORDEUM DISTICHON NUTANS Schubl. Poaceæ. **Barley.**

Presented by Mr. J. B. Jackson, American consul, Aleppo, Syria. Received June 2, 1914. Quoted notes by Mr. Jackson.

38484. "No particular name is applied locally to this variety except 'white' barley. The qualities possessed are unknown here. The market price for this and the black variety is the same."

38485. "No particular name is applied locally to this variety except 'black' barley. According to dealers the black barley is very hard and resists against insects for two or three years, and even longer if kept in dry places. The qualities possessed are unknown here. The market price for this and the white variety is the same."

38486. BOMBYCODENDRON VIDALIANUM (Naves) Merr. and Rolfe. (*Thespesia campylosiphon* Vidal.) Malvaceæ. **Lanutan.**

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Division of Horticulture, Lamao Experiment Station. Received June 4, 1914.

"Seed of the *lanutan*, a tree valuable for its wood, and also quite ornamental, with large white flowers having a red center, shaped like those of the tropical *Hibiscus rosasinensis*, about 7 inches in diameter. It is probably too tender for Florida." (*Wester.*)

38487 and 38488.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 27, 1914. Quoted notes by Mr. Meyer.

38487. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

From Taianfu, Shantung, China. Collected March 20, 1914.

"(No. 47b.) A sample of fine large Chinese hawthorn fruits. Excellent for jellies, preserves, etc. Price locally 5 to 7 cents (Mexican) per catty (16 ounces). Grafted trees and scions sent of this variety under No. 1209 [S. P. I. No. 38176], which see for description."

38487 and 38488—Continued. (Quoted notes by Mr. F. N. Meyer.)

38488. THLADIANTHA DUBIA Bunge. Cucurbitaceæ.

From Peking, China. Collected April 18, 1914.

"(No. 1217.) Tubers of a climbing cucurbitaceous plant, producing yellow flowers followed by fruits the size of hen's eggs, which become scarlet when fully ripe. The Chinese plant the roots of male and female plants close together so as to insure a bountiful supply of fruits. The roots of male plants are said to be large and elongated, while those of the female plants are small and round."

38489. TRICHOSANTHES KIRILOWII Maxim. Cucurbitaceæ. **Gourd.**

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 25, 1914.

"(No. 1218. April 28, 1914.) Tubers of a rare gourd, cultivated as an ornamental perennial. The fruits are also used for medicinal purposes, when dried. Chinese name *Kua lü*." (*Meyer.*)

38490. HORDEUM VULGARE L. Poaceæ. **Barley.**

From La Paz, Bolivia. Presented by Mr. John D. O'Rear, American minister, La Paz. Received June 9, 1914.

"Seeds of the barley generally grown over the whole Bolivian highlands, and of which, as far as I have been able to ascertain, no other varieties are used. It is planted, and in most cases the Indians forget all about it until time to reap the harvest. To plant it, the ground is tilled in a primitive manner and as the seed is thrown in, it is covered with about half an inch of dirt, this being done especially to keep the birds from eating the seed. The planting is done here in the early spring and the crop reaped in the autumn, but in many parts of the country it is planted the year round and always seems to produce equally well. Once planted, in some places it is watered daily, this producing the best results, but in places where water is scarce the irrigation is left entirely to the rains. The Indians very seldom use any fertilizers, excepting now and then a little manure, and almost immediately after reaping a crop they begin to plow and prepare the ground for another planting of seed. After four or five years they allow the ground to rest for a year. The grass is used generally all over the highlands as food for cattle and especially for horses and mules, when it is dry, and the grain is also fed to cattle and used for human food. The barley grows to a height of about 3 or 4 feet under ordinary circumstances here, and it is allowed to dry thoroughly before it is cut. The thrashing is done by allowing donkeys to tramp on it till the grain is thoroughly separated." (*O'Rear.*)

38491 and 38492. ULMUS spp. Ulmaceæ. **Elm.**

From Cambridge, England. Presented by Mr. R. Irwin Lynch, Botanic Garden. Received June 9, 1914.

38491. ULMUS FOLIACEA Gilib.

"*East Anglian* elm." (*Lynch.*)

"A tree 100 feet high, represented in Great Britain by several forms varying in habit from slender, cone-shaped trees to beautifully pendulous-branched ones. The typical form is a pyramidal tree, at least up to middle age, the branches often corky, sometimes extremely so; young shoots almost or quite without down in the adult tree, slender. Leaves

38491 and 38492—Continued.

obliquely oval or ovate, doubly toothed, narrowing at the apex to a shortish point, very unequal at the base (one side of the blade being tapered, the other rounded or semicordate), 1½ to 4 inches long, 1 to 2 inches wide (on vigorous shoots considerably larger), upper surface glossy green and smooth, lower surface downy only in the vein axils or along the midrib; stalk one-fourth to half an inch long; veins in 10 to 13 pairs. Flowers crowded in dense clusters close to the leafless shoot. Fruit oval or obovate, smooth, one-half to five-eighths of an inch long, notched at the top, with the seed close to the notch. Native of Europe and western Asia, and one of the two undisputed species of British elms. The other, *U. montana*, is amply distinguished by the seed being in the middle of the fruit, by the very downy shoots and much larger, downy leaves. The common elm, *U. campestris*, differs in its rounder leaf, downy all over beneath and rough above. The usual autumn color is yellow." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 618.*)

38492. ULMUS HOLLANDICA VEGETA (Loud.) Rehder.

"The *Huntingdon* elm." (*Lynch.*)

"This fine elm, according to information given to Loudon by Mr. John Wood, of Huntingdon, in 1836, was raised in the nursery of his firm about the middle of the eighteenth century from seed gathered in Hinchingbrook Park. It is, no doubt, a hybrid between *U. montana* [*U. scabra* Miller] and *U. nitens* [*U. glabra* Miller], and, like many hybrid trees, is of remarkably vigorous growth. One of the largest of all elms, it reaches 100 feet in height, forming a thick, short trunk 5 or 6 feet in diameter with ascending branches. Leaves up to 5 or 6 inches long, more than half as wide, smooth above and downy beneath only in the leaf axils. Fruit oval, up to seven-eighths of an inch long, the seed not reaching to the notch at the top. This last character and its less downy leaves distinguish it from *U. major*, of presumably the same parentage. The veins, too, are more numerous (14 to 18 pairs) than in *U. major*. According to Elwes it has the defect of splitting in the trunk, due to its habit of forking low down. This, however, can be prevented by timely pruning. The tree produces suckers." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 621.*)

38493 to 38495.

From Chiengrai, Siam. Presented by Dr. W. T. Lyon, Overbrook Hospital. Received June 4, 1914. Quoted notes by Dr. Lyon.

38493 and 38494. ORYZA SATIVA L. Poaceæ. **Rice.**

38493. "*Kow chow*, Siamese name. This bears a little heavier than *Kow san* [S. P. I. No. 38494]. Is white and has very hard kernels, and resembles American rice very much. About 18 varieties are grown here in North Siam."

38494. "*Kow san*, Siamese name. Is very glutinous and is prepared by steaming; the kernels are very sticky. The fields are not measured in acres like ours in America, but are measured by baskets. A field planted to *Kow san*, which requires 4 baskets to plant, will yield from 400 to 450 baskets."

38495. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"This was grown at Chiengkum about 60 miles from here, near the French Indo-China border."

38496 and 38497. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malaceæ.
Early loquat.

From Italy. Presented by Dr. Gustav Eisen, Rome, Italy. Received June 10, 1914. Quoted notes by Dr. Eisen.

38496. "From Naples, Italy. Seeds of a large plum-shaped loquat. Very early; ripe April 1. Extraordinarily sweet; seeds variable and not in conformity with the fruit. This is the earliest in the market and quite remarkable as to size and quality."

38497. "From Boscotrecase, Italy. Giant loquat. Very finest quality and largest size. Of bright deep-orange color, seeds round. The tree is said to be an enormous bearer and of the very best quality. May 1 to 24."

38498. SYNECANTHUS FIBROSUS H. Wendland. Phœnicaceæ.
Uchul palm.

From Senahu, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 11, 1914.

"Ripe fruits red. Collected May 20, 1914. A slender, graceful, pinnate-leaved palm reaching 15 feet in height, with large, open inflorescences bearing beautiful bright-red fruits the size of a large cherry. Grows in cool, damp mountain-side forests in the Senahu district at an altitude of 2,000 to 4,000 feet." (*Cook.*)

38499 to 38514.

From Buitenzorg, Java. Presented by the Director of the Botanic Garden. Plants received May 27, 1914.

38499. CITRUS AURANTIFOLIA (Christm.) Swingle. Rutaceæ.

No. 2. *Djeroek citroen basar.*

38500 and 38501. CUDRANIA JAVANENSIS Trecul. Moraceæ.

38500. No. 5.

"This climbing thorny shrub can be utilized for hedges. Fruit edible, of a pleasant taste. The root furnishes a yellow dye." (*Mueller, Select Extra-Tropical Plants.*)

38501. No. 6.

38502 to 38508. CITRUS spp. Rutaceæ.

38502. CITRUS MEDICA L. **Citron.**

No. 7. Var. *genuina* Engl. (*Djeroek citroen.*)

38503. CITRUS AURANTIUM L. **Bitter orange.**

No. 9. (*Djeroek manis.*)

38504. CITRUS HYSTRIX DC.

No. 10. (*Djeroek peoroet.*)

"A wild species whose fruit is used for washing hair and bleaching clothes." (*H. N. Whitford, Forests of the Philippines.*)

"A tree 15 meters in height and 15 to 20 cm. in diameter, wood yellowish, fibrous, with very hard grain, good for making tool handles, and for joinery and cabinetwork." (*Lanessan, Plantes Utiles des Colonies Françaises.*)

38505. CITRUS PAPAYA Hassk.

No. 11. (*Djeroek papaya.*)

38499 to 38514—Continued.

38506 to 38508. CITRUS AURANTIUM L. **Bitter orange.**

38506. No. 12. (*Djeroek pandan.*)

38507. No. 14. (*Djeroek balie.*)

38508. No. 15. (*Djeroek balie.*)

38509 and 38510. SEVERINIA BUXIFOLIA (Poir.) Tenore. Rutaceæ. (*Atalantia buxifolia* Oliv.)

38509. No. 16. One plant.

38510. No. 17. One plant.

38511. ATALANTIA MONOPHYLLA DC. Rutaceæ.

No. 20. Var. *genuina* Hochr.

"A large shrub or small tree, native to India, Ceylon, Burma, Siam, and Indo-China, usually spiny; leaves glabrous or sometimes pubescent, 1 to 3 inches long; petioles short, slightly or not at all winged; flowers borne in axillary panicles; calyx irregularly lobed, split to the base on one side; petals usually 4, stamens 8, the filaments connate and forming a completely closed tube; ovary 3 to 5 celled; fruit from one-half to three-fourths of an inch in diameter, with skin like a lime, globose, with several cells (generally 4), each usually containing one seed and filled with pulp vesicles, making the fruit much like a miniature orange. This tree, still little known outside of India and Ceylon, the type of the genus Atalantia, is one of the promising species for trial as a stock on which to graft other citrus fruits and also for use in breeding new types of citrus fruits. The fruits yield an oil which in India is considered a valuable application in chronic rheumatism." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

38512. DIOSPYROS PEREGRINA (Gaertn.) Guerke. Diospyraceæ. (*Diospyros embryopteris* Pers.)

No. 21.

See S. P. I. No. 33567 for previous introduction and description.

38513 and 38514. GARCINIA KIDIA Roxb. Clusiaceæ.

38513. No. 23. One plant.

38514. No. 24. One plant.

"*Toung-tha-lai.* An evergreen tree 50 to 70 by 20 to 30 by 5 to 6 feet. Berry the size of a small lime, globular ovoid, dark purple-brown, much depressed at the apex, terminated by a nipple-shaped protuberance on which the thick and short-styled stigma rests. Frequent in the moister upper mixed and in the tropical forests all over Burma from Chittagong, Pegu, and Martaban down to Tenasserim and the Andamans. Flowers in March to May, fruits May to June. Shade loving. Substratum permeable sandstone and metamorphic. Wood white, turning yellowish, rather heavy, coarsely fibrous, loose grained, very perishable. Yields inferior gamboge." (*Vesque, Guttiferæ.*)

38515 and 38516. CHAMAEDOREA spp. Phœnicaceæ.

From Senahu, Department of Alta Verapaz, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 11, 1914. Quoted notes by Mr. Cook.

38515. CHAMAEDOREA sp. **Canquib palm.**

"A handsome dwarf, finely pinnate-leaved palm, growing in the deep shade of mountain forests and dry protected hillsides in the Senahu district at an altitude of 2,000 to 4,000 feet. Grows up to 3 feet in

38515 and 38516—Continued. (Quoted notes by Mr. O. F. Cook.)

height. Shows wide range of adaptability to flourish under moist forest conditions as well as dry hillsides exposed to considerable dry weather. It is specially attractive as a household or table palm."

38516. CHAMAEDOREA ERNESTI-AUGUSTI H. Wendland.

Shella-accum palm.

"A small, handsome, slender-stemmed, simple-leaved palm, growing in the moist mountain forests of the Senahu district at an altitude of 2,500 feet. Suitable for greenhouse and household cultivation."

38517 to 38522.

From La Paz, Bolivia. Presented by Mr. Horace G. Knowles, Incaoro Mines Company. Received May 26, 1914. Quoted notes by Mr. Knowles.

38517. ZEA MAYS L. Poaceæ. **Corn.**

"*Cuzco.*"

38518. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"These seeds were taken from small melons resembling somewhat in size, flavor, and color of flesh the Princess Marie and Roumanian melon."

38519. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

"Seeds from the largest muskmelon or cantaloupe I ever saw. It weighed about 15 pounds and the flavor was very good. It can be considered the other extreme in size to that of the watermelon [S. P. I. No. 38518]."

38520 to 38522. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.

Strawberry.

"I have been very much impressed with the firmness and keeping quality of the Bolivian strawberry. To reach this market they have to make a long and hard trip on burros, and after that I have kept them for two weeks in good condition. It occurred to me that they might be crossed with some of our berries and impart to them some of their firmness and keeping quality. They are longer than our berries, and the color is light flesh, with shade of yellow, not as pretty as our deep-red varieties. The white one with cream tint [S. P. I. No. 38520] was curious because of its color and also its flower, which was quite distinct from that of our wild strawberry."

38523. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Mamouret ul Aziz (Harput), Turkey. Presented by Mr. William W. Masterson, American consul. Received May 28 and June 9, 1914.

"These seeds were procured last season near a mountain village some six hours away." (*Masterson.*)

38524. ACACIA VEREK Guill. and Per. Mimosaceæ. **Gum arabic.**

From Khartum, Sudan. Presented by Mr. S. A. Wood, Assistant Director of Forests, Department of Agriculture and Forests. Received June 13, 1914.

"This tree produces the true gum arabic of commerce. It thrives best in a dry climate, with a maximum rainfall of 21 inches and a dry period of no rain for several months. Any soil will suit it. The tree as it grows out here is fit for tapping in the fifth year after sowing." (*Wood.*)

Distribution.—The Senegambia region of Upper Guinea on the west coast of Africa, and in the Nile Valley in Nubia.

38525 and 38526. Annona spp. Annonaceæ.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received June 11, 1914.

38525. Annona senegalensis Pers. **Anona.**

"Fresh seeds collected by Dr. Medley Wood, of the Natal Herbarium, Durban." (*Pole Evans.*)

"*Annona senegalensis* Pers. is remarkably variable, occurring sometimes as a small shrub less than a meter high, and sometimes as a large tree. The flowers are 6 petaled, with the inner petals narrow, connivent, their tips meeting above the center of the gynœcium. The seeds are small, oblong, hard, smooth, and glossy, with relatively large caruncles at the base, somewhat like those of *A. cornifolia* and *A. nutans* of southern Brazil and Paraguay. It is possible that the species *A. senegalensis* as now understood may be found to be composed of several species." (*Safford, Classification of Annona.*)

38526. Annona cherimola Miller. **Cherimoya.**

"Seeds of the cultivated variety grown by Mr. Trollope, Wonderboom, Pretoria, Pretoria district. Although of fair size, it is not abnormal by any means, as fruits up to 21 pounds in weight are not altogether uncommon. The variety in question is unnamed and was grown from seed of a specimen brought to Durban from India, which country may be set down as the home of the fruit. The custard-apple has a very wide range in South Africa; it is grown successfully in the warmer districts of the Transvaal, Natal, and Cape Provinces, and may be found from Louis Trichardt in the north to the district of George on the south coast. Propagation is simple, as the tree grows readily from seed, but (as in the case of most other fruits) it can not be depended upon to reproduce itself true from seed; recourse therefore is had to grafting, and this is accomplished usually by much the same method as the Western Province farmer employs in grafting his grapevines; the scions are inserted in the stocks and the whole covered over with soil. It appears to be immaterial whether the grafting is done below, on a level with the surface, or above the ground, as long as the scion is covered and kept fairly moist for the first week or two. From what may be gathered from Indian writers on the subject, it would appear that the custard-apple tree has a decided weakness for growing out of cracks and crannies in rocks, old walls, and other similar situations. Possibly in the wild state this may be the case, and so, assuming the correctness of this statement, one is prepared to read that 'a deep stony soil is generally suitable, but alluvial produces good specimens.' From what the writer has seen in South Africa, both the best-grown trees and the finest fruit are produced in the deep free loams, such as may be found along the Magaliesberg Mountains in the Transvaal and in any other parts both of the Cape and Natal. It is necessary, however, for the tree to succeed that a frostless situation be selected in which to plant it; that plenty of room be allowed for the spread of its roots and branches; and that it receive such attention with the pruning shears and cultivator as is meted out to any other fruit tree when planted in orchard form. When single trees are grown in a garden it may be possible to afford them plenty of liquid cow manure, and to this particular dressing they seem to respond more readily than to any other.

38525 and 38526—Continued.

In the case of a small plantation, this system would be more difficult to carry out, but in case cow manure were obtainable it should certainly be used and a complete fertilizer applied biennially. The custard-apple is supposed to be one of those fruits for which a taste must be acquired." (*Agricultural Journal of the Union of South Africa, vol. 6, no. 2, p. 273.*)

38527. ALEURITES FORDII Hemsley. Euphorbiaceæ. **Tung tree.**

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 3, 1914.

38528 and 38529. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

From Johannesburg, Transvaal, Africa. Presented by Mr. J. Burtt Davy. Received June 11, 1914. Quoted notes by Mr. Davy.

38528. "*Gluyas Early.* One of the two useful wheats now grown here."

38529. "*Wolkoren.* One of the two useful wheats now grown here."

38530 to 38532. ORYZA SATIVA L. Poaceæ. **Rice.**

From Georgetown, British Guiana. Presented by Mr. Lester W. Collins, vice and deputy consul in charge, who secured it from Mr. C. A. Bancroft, Science and Agriculture Department. Received June 8, 1914. Quoted notes from Mr. Bancroft.

38530. "Hill or Upland rice No. 6 (H6). Introduced in 1902 from Ceylon. Appearance vigorous. Stooling good. Growth spreading, 2 to 3 feet in height. Grain shape, long; paddy color, pale straw; husking good. Comes to maturity in six months. Milling qualities good and well adapted for making both white and brown rice. In a series of tests extending over nine years (1905 to 1913, inclusive) the mean results are as follows: Bags (120 pounds) paddy per acre, 38.9."

38531. "Ordinary or Lowland rice No. 75 (O75). Eastern name *Sura dhani.* Has been cultivated at the experimental fields since 1905. Appearance vigorous, stooling freely. Growth spreading, 2 to 3 feet height. Grain shape, long; paddy color, pale straw; husking easy. Comes to maturity in six months. Milling qualities good and well adapted for making both white and brown rice. In a series of tests extending over nine years (1905 to 1913, inclusive) the mean results are as follows: Bags (120 pounds) paddy per acre, 38.9. This variety is at present in demand by the East Indians, in whose hands the greater part of the rice cultivation of this colony is."

38532. "*Demerara Creole.* This variety, which was probably brought from the East by the indentured Indians, many years back, is the most extensively cultivated. It has been cultivated in the colony for a number of years. Growth spreading, 2 to 3 feet in height. Grain shape, long; paddy color, pale straw; husking easy. Comes to maturity in six months. Milling qualities good but not quite up to H6 [S. P. I. No. 38530] and O75 [S. P. I. No. 38531]. In a series of tests extending over nine years (1905 to 1913, inclusive), the mean results are as follows: Bags (120 pounds) paddy per acre, 37."

38533. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Victoria, Kamerun, German West Africa. Presented by the director of the experiment station. Received June 1, 1914.

Gabli killiröm. Sown in the rainy season. Seed from the Mora residency in the German lands near Lake Chad.

38534 to 38536.

From Marionofka, Seytler, Crimea, Russia. Procured by Mr. E. Brown, of the Bureau of Plant Industry, from Mr. Christian Fey. Received June 3, 1914.

38534. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

"Semihard winter wheat." (*C. R. Ball.*)

38535 and 38536. HORDEUM spp. Poaceæ. **Barley.**

38535. HORDEUM DISTICHON NUTANS Schubl.

Two-rowed barley.

38536. HORDEUM VULGARE L.

Six-rowed barley.

38537. CHRYSANTHEMUM sp. Asteraceæ.

From Liverpool, England. Presented by Joseph Gardner & Sons. Received June 6, 1914.

Sample of Asiatic pyrethrum.

38538. PTYCHOSPERMA GRACILIS Labill. Phœnicaceæ. **Palm.**

From Belize, British Honduras. Procured by Mr. O. F. Cook, of the Bureau of Plant Industry, from the Belize Botanical Station. Received June 12, 1914.

"No. 1. Small species. April 19, 1914. A cespitose pinnate-leaved palm 12 to 15 feet high, growing in the Belize Botanic Garden about 10 miles from the mouth of the Belize River. Probably suitable for cultivation in Florida and California. The pinnæ are broader than those of *Seaforthia elegans*, and more broadly truncate at the ends. The inflorescence has simple branches covered with a rusty tomentum." (*Cook.*)

38539 and 38540. SEAFORTHIA ELEGANS R. Brown. Phœnicaceæ.
(*Ptychosperma elegans* Blume.) **Palm.**

From Livingston, Department of Izabal, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 12, 1914. Quoted notes by Mr. Cook.

38539. "No. 2. Large fruit. April 21, 1914. From a tree with larger seeds than No. 3 [S. P. I. No. 38540].

38540. "No. 3. Small-fruited form. A small palm, 10 to 15 feet high; trunk 4 inches thick, bearing large clusters of coral-red fruits about the size of thorn-apples (Crataegus) and having exactly the same taste."

38541 and 38542. STYLOMA spp. Phœnicaceæ. **Palm.**

From Belize, British Honduras. Procured by Mr. O. F. Cook, of the Bureau of Plant Industry, from the Belize Botanical Station. Handsome fan-leaved palms growing in the Belize Botanic Garden about 10 miles from the mouth of the Belize River; received June 12, 1914.

38541. STYLOMA PACIFICA (Seem. and Wendl.) O. F. Cook. (*Pritchardia pacifica* Seem. and Wendl.)

No. 4. "Probably suitable only for extreme southern Florida." (*Cook.*)

38542. STYLOMA THURSTONII (Muell. and Drude) O. F. Cook. (*Pritchardia thurstonii* Muell. and Drude.)

No. 5.

38543. CHAMAEDOREA GRAMINIFOLIA H. Wendland. Phœnicaceæ. **Palm.**

From Lanquin, Department of Alta Verapaz, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 12, 1914.

"No. 6. Collected May 7, 1914. Nearly ripe seeds. A small, stoloniferous, slender-stemmed, finely pinnate-leaved palm growing at the summits of very rocky hills and cliffs, after leaving Lanquin on the road to Chiacum. Altitude, about 3,000 feet." (*Cook.*)

38544 to 38547.

Collected on the Roosevelt expedition to South America by Mr. Leo E. Miller, of the American Museum of Natural History, New York City. Received June 9, 1914. Quoted notes by Mr. Miller.

38544 to 38546. ZEA MAYS L. Poaceæ. **Corn.**

38544. "No. 1. Upper Gy Parana River, Brazil. Corn received from the Panetes, or Powetes, Indians on the upper Gy Parana (Machabo) River, Brazil, South America. This tribe of Indians was absolutely unknown. I was the first person to come in contact with them. The Gy Parana flows into the Madeira. March, 1914."

38545. "No. 2. October, 1913. Forty-day corn from southern Argentina, said to mature within 40 days of planting."

38546. "No. 3. October, 1913. Corn from extreme southern Argentina. Said to grow in cold climate; requires five months to mature."

38547. LECYTHIS USITATA Miers. Lecythidaceæ. **Paradise nut.**

"No. 4. May, 1914. Nuts from the lower Amazon. Comparatively rare, considered better, and more expensive than 'Brazil nuts.' Trees are said to produce within three years. Requires marshy or swampy ground in hot locality."

38548 to 38567.

From Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 18, 1914. Quoted notes by Mr. Cook, unless otherwise indicated.

38548 to 38567—Continued. (Quoted notes by Mr. O. F. Cook.)

38548. SOLANUM MURICATUM Aiton. Solanaceæ. **Pepino.**

"June 6, 1914. Antigua, Guatemala."

"According to Werckle, the unripe fruits of this species under the name *pepino mango* are eaten cooked like pumpkins, and when ripe form a very good salad. It appears to be native to Guatemala, but in Costa Rica, where it is also called *manguena*, it is met with only in a state of cultivation." (*Pittier, Plantes Usuales de Costa Rica.*)

Cuttings and rooted plants.

38549 to 38564. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

38549. "No. 1. From Antigua, Department of Sacatepequez, Guatemala. Cuttings from a large spreading tree, 35 feet high, growing behind the Hotel Casa de Rojas. Altitude 5,000 feet. At this time (June 6) the tree carried a large crop of mature fruit. The fruit was large (3½ inches in diameter), round, and hard shelled. The outer skin was smooth and of a pleasing dark-green color. The flesh was thick, firm, pale yellow near the seed, becoming yellowish green toward the surface. Flavor excellent. Seed medium large."

38550 to 38564.

Hard-shelled avocados from the market, city of Guatemala, Guatemala.

38550. "No. 1. Round type, 10 cm. long by 9 cm. in diameter. Surface green, smooth. Shell thick. Flesh firm, pale yellowish green near seed, becoming darker toward surface. Seed large."

38551. "No. 2. Round green type with rather smooth outer surface thick; tough shell. Flesh pale, whitish, firm; seed large. Fruit measured about 10.5 cm. long by 9.5 cm. in diameter."

38552. "No. 3. Fruit had thick flesh of a bright-yellow color, much superior in attractiveness to Nos. 1 and 2 [S. P. I. Nos. 38550 and 38551]. Fruit measured 10.5 cm. long by 9.5 cm. in diameter, shell less than 2 mm. thick, but fairly firm. Outer surface rather smooth. Seed smaller than Nos. 1 and 2.

38553. "No. 4. Fruit with very rough outer surface, green, slightly longer than broad. Flesh superior to any of the others. Shell thick and hard. Seed rather small. Fruit measures about 10.5 cm. long by 9.5 cm. in diameter."

38554. "No. 5. Fruit round, green, very rough-skinned, shell extremely hard and thick (4 to 5 mm.). Flesh pale greenish white around seed, becoming darker toward outer shell. Seed rather large. Fruit measured about 8.5 cm. long by 9 cm. wide. Flat on both ends."

38555. "No. 6. Fruit green, rather smooth on surface, not so large as No. 5 [S. P. I. No. 38554], but of similar shape. Shell thick. Flesh pale greenish white near the seed, becoming darker toward the skin; rather thin but firm. Seed large."

38548 to 38567—Continued. (Quoted notes by Mr. O. F. Cook.)

38556. "No. 7. Fruit oval, outer surface very smooth, pleasing dark-green color. Shell thick. Flesh thick, firm, pale greenish white near the seed, becoming darker toward the shell. Fruit measured 10.5 cm. long by 9 cm. in diameter. Seed rather small."

38557. "No. 8. This was the largest fruit seen in the market. Obovate, outer skin purplish, smooth, 12 cm. (5 inches) long by 10.5 cm. in diameter. Shell thick. Flesh thick, firm, pale greenish white near the seed, becoming darker toward the surface. Seed large."

38558. "No. 9. Large purplish, smooth-skinned type like No. 8 [S. P. I. No. 38557], but slightly smaller. Seed about the same size. Flesh not so thick."

38559. "No. 10. Fruit round, flat topped, purplish, outer surface rough. Shell thick. Flesh pale greenish near the seed, becoming darker toward the surface. Seed large. Fruit 8 cm. long by 9 cm. in diameter."

38560. "No. 11. Fruit flattest seen at market. Length, 7.5 cm.; diameter, 9 cm. Purplish in color; surface rough; shell thick. Flesh pale greenish near the seed, becoming darker toward the surface. Seed large."

38561. "No. 12. Fruit purplish, rough, nearest round, measuring 8 cm. each way. Shell thick. Flesh pale greenish near the seed, becoming darker toward the surface. Seed large."

38562. "No. 13. Fruit obovate, 10.5 cm. long by 9.5 cm. in diameter. Surface rough. Shell not so thick as others. Flesh thick, firm, pale greenish near the seed, becoming darker toward the surface. Seed small. This fruit would be very desirable if the shell were thicker."

38563. "No. 14. Fruit pear shaped, purplish, slightly longer than No. 38562. Shell thick (3 to 4 mm.). Flesh yellowish in color at the middle, but the greenish layer under the shell is quite deep. Proportion of flesh in this type is greater than in the round forms. Seed very small."

38564. "No. 15. Fruit pear shaped, purplish, about same size as No. 14 [S. P. I. No. 38563]; shell not so thick. Flesh yellowish at the middle, but the greenish layer under the shell is quite deep. Proportion of flesh in this type is greater than in the round forms. Seed very small."

38565. HYMENAEA COURBARIL L. Cæsalpiniaceæ. **Guapinol.**

"From the market of the city of Guatemala, June, 1914. Altitude, 5,000 feet. A handsome tree with curious compound leaves, consisting of only two leaflets, comparable to Bauhinia, but not united. Thick, woody shells of large pods contain a resin and are burned by the Indians like torches. Said also to be used in the manufacture of varnish. The seeds are packed in a thick layer of grayish powdery substance like licorice root, having a somewhat similar sweetish taste. Commonly eaten, and the pods are often sold in the markets."

Distribution.—From southern Mexico through Central America and the northern part of South America to Brazil.

38548 to 38567—Continued. (Quoted notes by Mr. O. F. Cook.)

38566. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook. Sapotaceæ.
(*Calocarpum viride* Pittier.)

"Inferior variety from the market of the city of Guatemala."

See S. P. I. Nos. 38478 to 38481 for previous introductions and description.

38567. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Sw.)

"Thin-skinned variety of chayote from the market of the city of Guatemala."

38568. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malaceæ. **Loquat.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received June 20, 1914.

"*Tanaka* loquat. An excellent variety of fruit, with very firm flesh of a yellow color. Stands transportation for a period of one week. In Algeria the seeds give varieties superior to the original type, furnishing interesting varieties for the market." (*Trabut.*)

See S. P. I. No. 8890 for description of the original introduction of this variety from Japan into the United States.

38569 and 38570. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Victoria, Kamerun, German West Africa. Presented by the director of the Experiment Station. Received June 1, 1914. Quoted notes by the director.

"Seed from the Mora residency in the German lands near Lake Chad."

38569. "*Gabli nialgo.* Sown at the rainy season."

38570. "*Massaggoa adjagama.* For the manufacture of firkiboden this variety is preferred. It is planted after the rainy season."

38571 to 38576. RUBUS spp. Rosaceæ.

From Sibpur, near Calcutta, India. Presented by the Royal Botanic Gardens. Received June 15, 1914.

38571. RUBUS ALPESTRIS Blume.

Distribution.—A straggling shrub found on the temperate slopes of the Himalayas at an altitude of 7,000 to 18,000 feet and also in Java.

38572. RUBUS ANDERSONI Hook. f.

Distribution.—A bramble from altitudes of 7,000 to 8,000 feet in the Sikkim Himalayas.

38573. RUBUS CALYCINUS Wallich.

Distribution.—A creeping herbaceous perennial with simple reniform leaves and scarlet fruits, usually with but few fruitlets, found in India on the temperate slopes of the Khasi Hills at an altitude of 4,000 to 5,000 feet.

38574. RUBUS NIVEUS Thunb.

See S. P. I. Nos. 32453, 33344, and 34334 for previous introductions and description under the name *R. lasiocarpus.*

38571 to 38576—Continued.

"A large, spreading shrub; stems and branches glabrous, purple, pendulous, and often rooting at the tips; prickles small, usually few. Leaflets 5 to 11, ovate or ovate-lanceolate, lateral leaflets 1½ to 2½ inches, terminal one rather larger, often lobed; upper surface green, glabrous, lower white tomentose. Flowers dark pink, one-third to two-thirds of an inch in diameter, crowded in small, tomentose panicles. Calyx lobes tomentose inside and out, lanceolate, acute, longer than the petals. Drupelets black, hoary. Throughout the Himalayas, 4,000 to 10,000 feet." (*Collett, Flora Simlensis.*)

38575. RUBUS PEDUNCULOSUS Don.
(*Rubus niveus* Wall.)

Distribution.—A large rambling bush found on the temperate slopes of the Himalayas at an altitude of 6,000 to 10,000 feet, from Kashmir to Bhutan in northern India.

"A deciduous shrub, with very stout, erect, biennial stems, 1 to 1½ inches thick and in vigorous plants 4 to 6 yards high, covered with a soft, thick, velvety down, and sprinkled over with minute prickles. Leaves 6 to over 12 inches long, composed of 3 to 5 leaflets. Side leaflets about half the size of the terminal one, stalkless or nearly so, obliquely ovate, coarsely and doubly toothed, slightly hairy above, covered with a close white felt beneath, and with silvery hairs on the veins; terminal leaflets ovate to roundish heart shaped, long stalked, from 3 to 5 inches long and wide, in other respects the same as the side ones. Flowers white or pale pink, half an inch across, the petals shorter than the sepals. Fruits blue-black, small.

"Native of western and central China, whence it was introduced about 1901; the species has, however, been known to botanists as far back as 1825 from plants growing on the Himalayas. The Chinese plants are chiefly remarkable for their vigor; Mr. Wilson states that it is occasionally 20 feet high. It is the most robust of all *Rubi;* hardy in Britain, as may be seen by plants in the Kew collection." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, pp. 458–459.*)

38576. RUBUS PANICULATUS Smith.

See S. P. I. No. 23870 for previous introduction and description.

"A rambling climber; prickles few, very small; branches tomentose. Leaves simple, broadly ovate, 3 to 5 inches, usually cordate, long pointed, more or less lobed, upper surface nearly glabrous, lower white tomentose. Flowers white, in spreading, tomentose, terminal panicles. Calyx white tomentose; lobes narrowly pointed, longer than the petals. Drupelets black or dark purple. Temperate Himalayas, 3,000 to 7,000 feet." (*Collett, Flora Simlensis.*)

38577. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Concepcion and Temuco, Chile. Presented by Mr. G. F. Arms, Concepcion, Chile. Received June 15, 1914.

"Seeds of a very late peach ripening in May, which would correspond to our November." (*W. F. Wight.*)

38578. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 20, 1914.

"Seed of large round type (hard shelled), dark brown on outside, flesh cream colored. Called '*Antigua* No. 3.' Weight of fruit 2 pounds. June 7, 1914." (*Cook.*)

38579. TRIFOLIUM REPENS L. Fabaceæ. **Wild white clover.**

From Chester, England. Procured from Mr. James Hunter. Received April, 1914.

"An indigenous variety of white clover of Kentish origin which, owing to its success in experiments made by the Armstrong College at Cockle Park, has lately been much sought after. It is a very desirable variety of white clover, is very permanent, and superior to the ordinary white Dutch clover, inasmuch as one pound of seed of the wild variety seems to be as effective as two pounds of the Dutch. It is well suited for pasture." (*Hunter.*)

38580. ELEPHANTORRHIZA ELEPHANTINA (Burch.) Skeels. Mimo-
(*Elephantorrhiza burchellii* Benth.) [saceæ.

From Johannesburg, Transvaal, South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received June 19, 1914.

See S. P. I. Nos. 25941 and 31309 for previous introductions.

"The plants of this genus can hardly be said to grow to shrub size; they are merely shrublets of annual growth, 1 to 2 feet high, from perennial roots. Leaves bipinnate, with 6 to 8 pairs of pinnæ, each many foliate, the leaflets half an inch long, obliquely linear. Racemes simple or branched, many flowered, 2 to 4 inches long, rising from the axils of the lower leaves; the flowers shortly pedicelled, one-sixth of an inch long, yellowish. Calyx 5-toothed. Petals 5, free. Stamens 10, ovary sessile, many ovuled. Pod 6 to 8 inches long, 1½ inches wide, thin, with a persistent margin from which the valves dehisce separately. *E. elephantina* is the only Cape species, being distinguished from the other, a Transvaal plant, by its linear pointed leaflets. The huge roots are rich in tannin, and were formerly used largely in colonial tanning, and are still preferred for the production of a certain color and quality not obtained with other tanning materials. Its cultivation has not been attempted, and the natural supply is insufficient to meet a large commercial demand." (*Sim, Forest Flora of Cape Colony.*)

38581 to 38583.

From Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 20 and 23, 1914. Quoted notes by Mr. Cook.

38581. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala. Fruit from tree described under S. P. I. No. 38549.

38582. CHAMAEDOREA sp. Phœnicaceæ. **Pacaya palm.**

From San Antonio, Guatemala.

"June 5, 1914. Perhaps not the same species as the *pacaya* of Coban. A somewhat smaller palm, with the pinnæ closer together and somewhat broader."

38581 to 38583—Continued. (Quoted notes by Mr. O. F. Cook.)

38583. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala.

"Slightly pear shaped, hard shelled, flesh thick, firm. '*Antigua* No. 2.' Collected June 6, 1914, in the market at Antigua. Surface green, rough; shell thick; seed small."

38584 to 38586. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ.
(*Pennisetum typhoideum* Rich.) **Pearl millet.**

From Victoria, Kamerun, German West Africa. Presented by the director of the experiment station. Received June 1, 1914. Quoted notes by the director.

"Seed from the Mora residency in the German lands near Lake Chad. The resident writes: 'These species appear in all parts of the residency.' For the construction of firkiboden the *Massaggoa adjagama* [S. P. I. No. 38570] is preferred. The latter is only sowed after the rainy season, the others at the rainy season."

38584. "*Argum breke.* Planted during the rainy season."

38585. "*Argum matia.* Planted during the rainy season."

38586. "*Argum moro.* Sown during the rainy season."

38587. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Antigua, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 26, 1914.

"*Antigua* No. 1. From the same tree as the bud wood [S. P. I. No. 38549]. June 6, 1914." (*Cook.*)

38588. COCOPS RIVALIS O. F. Cook. Phœnicaceæ. **Palm.**

From Mayaguez, Porto Rico. Presented by Mr. W. E. Hess, Agricultural Experiment Station. Received June 16, 1914.

"Plants of the rarest and prettiest of Porto Rico palms. This species greatly resembles in habit and appearance *Geonoma gracilis*, but has more leaflets. At its type location it is growing on the bank of a stream, with the roots in the water, and in another location some 8 miles distant in an apparently dry limestone ravine; there are probably not more than a couple of dozen specimens left, and among this less than half a dozen fruiting trees; being of little value to the natives they are, when large enough, cut down for fence posts." (*Hess.*)

38589 to 38600.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, horticulturist, Egyptian Ministry of Agriculture, Gizeh, at the request of Prof. S. C. Mason, of the Bureau of Plant Industry. Received June 15, 1914. Quoted notes by Mr. Brown, except as otherwise indicated.

38589 to 38591. ZEA MAYS L. Poaceæ. **Corn.**

38589. "*Amricani* (American)."

38589 to 38600—Continued. (Quoted notes by Mr. T. W. Brown.)

38590. "*Beladi* (Egyptian)."

"Beladi is the earliest variety. It is short, with a thin stem and a small cob and grain. It is a light cropper and ripens in less than three months. The seed is yellow or white and round. It is much grown near towns for human consumption." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

38591. "*Biltani.*"

38592. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Isnawi.*"

38593. ZEA MAYS L. Poaceæ. **Corn.**

"*Nab el Gamal.*"

"*Neb el Gamel* is the variety probably most extensively grown. It is tall, thick stemmed, with a large cob and large, flat, translucent grains. The name is given from a fancied resemblance of the grain to the tooth of a camel. The yield is large, but it requires liberal manuring to produce full crops. It is late in ripening, occupying the land about four months." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

38594. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Ewaiga.*"

38595 to 38598. ZEA MAYS L. Poaceæ. **Corn.**

38595. "*Fayoumi.*" 38596. "*Manpalawi.*"

38597. "*Sinebra.*"

"Resembles *Neb el Gamel* somewhat in habit, but is not so vigorous. The cobs are smaller than *Neb el Gamel*, but larger than *Beladi*. The grain is translucent." (*Foaden and Fletcher, Textbook of Egyptian Agriculture.*)

38598. "*Hadari.*"

38599. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Saifi beladi rafeh* (Thin Summer Egyptian)."

38600. ZEA MAYS L. Poaceæ. **Corn.**

"*Safra* (yellow)."

38601. CEREUS TRIANGULARIS Miller. Cactaceæ. **Pitaya.**

From the city of Guatemala, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 20, 1914.

"From the market, city of Guatemala. June, 1914. *Pitaya*, not *pitahaya*, as in Porto Rico. Outer surface of fruit old rose in color, including flesh and skin. Pulp of interior bright magenta, with more red than magenta (Ridgway No. 46), but not so much as rosolane purple, and somewhat lighter than either, but appearing darker from the black seeds. The flesh is not as dark as a purple beet, but of nearly the same color. Taste is very pleasant, very slightly acid, not unlike watermelon or like prickly pear fruits, but seeds delicate and thin walled, so that they are readily chewed, like seeds of the fig. The pulp does not seem sticky, but each seed is inclosed in a separate vesicle, purple like the pulp, but apparently much more sticky, that adheres readily to the finger or to any dry surface. This doubtless serves the purpose of attaching the seeds to tree trunks, where the plants grow as epiphytes, or to walls."

38602 to 38617.

From La Paz, Bolivia. Presented by Mr. Horace G. Knowles. Received June 19, 1914. Tubers of the following; quoted notes by Mr. Knowles.

38602 to 38615. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

38602 to 38604. "*Anco-choque* (*papa blanca de monda*, white potato without admixture with other variety)."

38602. A. 38603. B. 38604. C.

38605 to 38607. "*Chiar imilla* (*papa para caldo*, potato for soup)."

38605. A. 38606. B. 38607. C.

38608. "*Mamani* (*papa de monda*, potato of unmixed variety)."

38609. "*Phiñu* (*papa de mesa*, table potato)."

38610. Purple potato, round.

38611. Reddish potato, round.

38612. Dark purple potato, round.

38613. Dark purple, long.

38614. White potato, small.

38615. Black potato.

38616. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Ulluco.**

"*Ullucu papa lisa* (smooth potato). Not a true potato, but *Ullucus tuberosus* of the family Basellaceæ."

38617. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

Purple, long bent.

38618 to 38632.

From Johannesburg, Transvaal, South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received June 19, 1914. Quoted notes by Mr. Davy, except as otherwise indicated.

38618 to 38631. TRITICUM spp. Poaceæ. **Wheat.**

38618 to 38621. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

38618. "Standerton Winter wheat. No. 14082."

38619. "(No. 14084.) Potchefstroom White wheat. This resembles the beardless *Wit Wolkoren*, but the glumes are smooth and shiny. A few specimens can generally be found in any field of wheat, but I have seen only one pure stand, and that was on the farm of Mr. Dirk Nolte, Groot Marico. Three seasons ago Mr. Nolte picked out a few ears from among his other wheats and sowed them apart from the others, harvesting the seed by itself. Last season he sowed from the progeny about a bag of seed, and now has 30 to 40 bags, which will enable him to test its comparative yield and milling qualities. This variety is sometimes known as *Kaalkop*, but this name applies equally to other sorts." (*Transvaal Agricultural Journal, vol. 6, no. 22, p. 250, 1908.*)

38620. "(No. 14085.) Caledon Baard wheat."

38621. "(No. 14081.) Spring wheat."

38622. TRITICUM DURUM Desf.
"(No. 14087.) *Apulia* (durum).

38623. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)
"(No. 14088.) Grimbeek's *Kleinkoren*."

38618 to 38632—Contd. (Quoted notes by Mr. J. Burtt Davy.)

38624 and 38625. TRITICUM DURUM Desf.

38624. "(No. 14089.) *Theunissen* (durum). The *Theunissen* shows an interesting transition from durum to soft type, which our millers think may make it useful in time."

38625. "(No. 14090.) *Medeah* wheat."

38626 to 38631. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

38626. "(No. 14091.) *Ecksteen* wheat. Resembles the *Wit Kleinkoren* [S. P. I. No. 38628], but is said to be some three weeks earlier in coming to maturity." (*Transvaal Agricultural Journal, vol. 6, no. 22, p. 250, 1908.*)

38627. "(No. 14093.) *Fourie* wheat."

38628. "(No. 14094.) *Wit Kleinkoren.* A short-stalked small-eared, white, bearded, glabrous wheat. By many farmers it is considered the best wheat of the country, though others prefer the softer grained, beardless *Wolkorens.* On many farms it was lost during the war and has not again been obtained, but some plants are to be found in almost every wheat field, and a few farmers have reestablished their stocks by selecting two or three and growing them separately; these farmers are now in a position to sell to their neighbors. The plants of *Kleinkoren* are low of stature as compared with the *Wolkorens,* hence the name *Kleinkoren;* the ears are smaller and average fewer grains than in the *Wolkorens,* but it is evident from the great variation in size under similar conditions that this fault could, to some extent at least, be improved away. *Kleinkoren* is said to require much manure, and it is not recommended for unmanured lands unless they are very rich. In the Crocodile Valley it is usually grown on lands manured with kraal manure and cropped with the tobacco during the previous summer." (*Transvaal Agricultural Journal, vol. 6, no. 22, p. 250, 1908.*)

38629. "(No. 14095.) *Rooi Wolkoren.* A beardless, tall-growing, heavy-headed variety, stooling well, i. e., producing a large number of stalks from a single root; the grains run from 75 to 109 per ear; the outer glumes are densely clothed with brownish red down, hence the name *Wolkoren.* This is the most widely grown variety in the Marico and Crocodile Valleys, and in the opinion of most farmers it divides honors with *Kleinkoren* as one of the two best wheats for these regions. For poor and unmanured lands it is considered the best wheat grown. The *wol* is considered objectionable, as it is said to felt the sieves of the machines; in damp seasons it hinders the drying out of the sheaves, as the moisture is retained longer than on the smooth ears of the *Kleinkorens.*" (*Transvaal Agricultural Journal, vol. 6, no. 22, p. 252, 1908.*)

38630. "(No. 14096.) *Gluyas Early* wheat."

38631. "(No. 14097.) *Australian Early* wheat."

38632. ERYTHRINA ZEYHERI Harvey. Fabaceæ.

"A very ornamental hardy herbaceous perennial. Flowers scarlet."

38633. FERULA sp. Apiaceæ. **Asafetida.**

From Teheran, Persia. Presented by Mr. Craig W. Wadsworth, American consul general. Received June 19, 1914.

"Ferula, which produces the asafetida of commerce, growing in the neighborhood of Meshed and Kerman. I wrote to the former place, but was unable to obtain the seed; however, one of our missionaries at Meshed, with the assistance of the British consul, succeeded in obtaining these roots." (*Wadsworth.*)

38634 to 38637.

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received June 20, 1914. Quoted notes by Mr. Goding.

38634. ACHRADELPHA MAMMOSA (L.) Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn. f.)

For previous introductions and description, see S. P. I. Nos. 35673 and 37813.

38635. ANNONA SQUAMOSA L. Annonaceæ. **Sugar-apple.**

"The fruit is the size of an orange, with pale-green skin, the markings of which resemble dressed alligator hide. Within, the appearance and taste resemble the other species. It grows on a bush found in the low coastal districts of Ecuador."

38636. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. **Tree tomato.**

"Seeds of a fruit locally called '*Tomate de arbol*,' found growing in the lowlands, but will stand a certain degree of frost. This tree tomato grows on a tree of good proportions, about 10 feet high. The fruit, ovoid in shape, about the size of a small peach, is of a bright reddish color; the skin, the interior divisions of them, the seeds, and the taste are almost identical with those of the ordinary tomato."

38637. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Wild cherry.**

"Seeds of a fruit locally called *capulies*, found growing in the lowlands, but will stand a certain degree of frost. This wild cherry grows on a large tree from which very hard lumber is made. It is said to be proof against insect borers and is used extensively where a strong and durable material is required. The fruit is pleasant to the taste."

38638 to 38640. PERSEA AMERICANA Miller. Lauraceæ.
(*Persea gratissima* Gaertn. f.) **Avocado.**

From Antigua, Guatemala. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 19, 1914.

From the same tree as the bud wood (S. P. I. No. 38549).

38638. No. 1.
38639. No. 2.
38640. No. 3.

38641 and 38642. PASSIFLORA spp. Passifloraceæ.
Passion fruit.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, U. S. Army, retired. Received June 24, 1914. Quoted notes by Capt. Lemly.

38641 and 38642—Contd. (Quoted notes by Capt. H. R. Lemly.)

38641. PASSIFLORA MALIFORMIS L.

"*Curuba.* A vine, bearing fruit, yellow when ripe, saffron-colored pulp. To be eaten with cream and sugar.

"This *Curuba* flourishes at this altitude, 9,000 feet, and a constant temperature of about 60° F. in the shade. It ought to grow in the United States."

38642. PASSIFLORA LIGULARIS Juss.

"*Granadilla.* Fruit of the passion vine; greenish yellow when ripe."

38643. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Tripoli, Africa. Presented by Dr. F. Franceschi, Bogliasco, Genoa, Italy. Received June 25, 1914.

"Var. *khobezy.* This variety grows larger and yields more foliage than the ordinary type. It appears to be very common and the seed costs twice as much. Experiments made at the Agricultural School of Portici have shown that it is rather tender and will be fit only for Florida and southern California, perhaps also for breeding purposes." (*Franceschi.*)

38644. PLUKENETIA CONOPHORA Muell. Arg. Euphorbiaceæ.

From Victoria, Kamerun, German West Africa. Presented by the experiment station. Received June 27, 1914.

Another oil fruit which springs from the creeping plant which is cultivated everywhere in the Ossidinge district in the fields among maize and can be obtained in great quantity was sent in to us also by Dr. Mansfield, district magistrate. Prof. Gilg determined the fruit as *Plukenetia conophora.* The thin-shelled nut, about the size of a walnut, contains a firm, round, hard, oily kernel, loose in the shell. The kernel as well as the oil contains no harmful substance, as various experiments with animals show; it is used by the natives as a cooking oil. It belongs also, like the linseed oil (to which it is very similar in other ways), to the drying oils. It will be very valuable as a substitute for linseed oil, which is rising in price from year to year and which is a raw product for linoleum and varnish making. The kernels without the shells weigh 4 to 5 grams. The native name of the plant is *Ngart.* The fatty residue contains 7.3 grams nitrogen—45.6 per cent protein. The investigation of the oil gives the following data:

Specification.	Ngart oil.	Linseed oils.
Oil content of the kernels, per cent	53.8	.....
Specific weight of the oil at 17.5° C	—0.934	0.930 to 0.934
Congealing point of oil °C	—33	—16 to —20
Iodin number of the oil	177.3	170 to 202
Iodin number of the free fatty acids	187.4	190 to 210
Saponification number	192	188 to 195
Refraction exponent at 17.5° C	—1.4830	.....

(Adapted from *Krause and Diesselhorst, Tropenpflanzer, vol. 13, p. 282, 1909.*)

38645. Olea foveolata E. Meyer. Oleaceæ. **Wild olive.**

From Cape Town, Union of South Africa. Presented by Mr. C. W. Mally, entomologist, Department of Agriculture, at the request of Mr. C. P. Lounsbury, Division of Entomology, Pretoria, Union of South Africa. Received June 27, 1914.

"Collected in the neighborhood of East London, Cape Province." (*Mally.*)

See S. P. I. Nos. 25846 and 33783 for previous introductions.

"A tree 30 to 40 feet in height, 9 to 15 inches stem diameter, usually found in what is or has been dense forest, and with a clean, straight stem so similar in marking to black ironwood (*O. laurifolia*) that expert woodcutters seldom differentiate between the two, but if they do it is considered of little importance which is used, the value being considered about equal, except that its size makes this more suitable for disselbooms (poles) than *O. laurifolia*, while for heavy timber the latter is the better. Leaves elliptical or oblong, varying a good deal in size and form, sometimes oval, usually about 2 inches long, three-fourths of an inch to 1½ inches wide, bluntly pointed, entire, coriaceous, glabrous glossy above, pale below, and with more or less hairy pits in the axils of the veins on the lower surface. Panicles axillary, much shorter than the leaves, few flowered; flowers one-fourth of an inch across, white; petals hooded, fruit half an inch long, elliptical, purple, nearly dry, with a large 1-seeded stone. Common in all the eastern and Natal forests, seldom so large as *O. laurifolia*, and not more sound. Fourcade gives its properties as 'Weight, 63 pounds per cubic foot; relative hardness, 7; coefficient of elasticity, 1,024 tons; modulus of rupture, 6.22 tons; crushing load, 4.5 tons per square inch.'" (*Sim, Forest Flora of Cape Colony*).

38646. Rubus bogotensis H. B. K. Rosaceæ. **Blackberry.**

From Fusagasuga, Colombia. Presented by Mr. F. L. Rockwood, clerk of the American Legation, Bogota, Colombia. Received June 25, 1914.

"Seeds of a large blackberry from Fusagasuga." (*Rockwood.*)

38647. Merremia hederacea (Burm.) Hallier. Convolvulaceæ. (*Convolvulus flavus* Willd.)

From the island of Guam. Presented by Mr. J. B. Thompson, Agricultural Experiment Station, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received June 29, 1914.

"A twining vine of the convolvulus family which is found to be an excellent forage plant here. It is very common here and springs up as volunteer growth on newly cleared and fallow fields at any time of the year providing there is sufficient moisture to germinate the seed. We have a tract of unseeded ground at the station with an area of approximately 2 acres, a portion of which is covered with this growth, and during the past three months three mature cows have been pasturing upon this tract exclusively and have made good gains every month, and this during a season when growth of most forage plants is backward and cattle generally have a tendency to fall in flesh. The tract would probably furnish plenty of pasture for two or three head of animals in addition to the three that are now maintained upon it. I am not aware of any other forage plant here for which stock in general seem to have an equal relish. Animals at the station showing a loss of appetite, during periods of fever, have frequently refused all else than this and the leaves of the bread-

38647—Continued.

fruit tree, and this little vine is generally the last nourishment to be declined. I wish, however, to caution in regard to the handling of this seed, as the tendency which this plant shows to reseed the soil and perpetuate itself for year after year on a given tract of land might make it a pest and a very troublesome one. Here it sometimes appears in cornfields after cultivation is discontinued and acts somewhat similar to the old related morning-glory pest of Kansas corn fields." (*Thompson.*)

Distribution.—A perennial twining vine with yellow flowers, found in tropical Africa and Asia, and eastward through the islands of the Indian Ocean to the Philippines.

38648 and 38649.

From St. Croix, Danish West Indies. Presented by Dr. Longfield Smith, director, Agricultural Experiment Station. Received June 27, 1914. Quoted notes by Dr. Smith, except as otherwise indicated.

38648. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"Seeds of a very fine papaya."

38649. TABEBUIA PENTAPHYLLA (L.) Hemsley. Bignoniaceæ.

"A very fine flowering tree. The grandparent of these seeds is growing in Dominica, and when in flower presents the most handsome appearance."

"A tree of the forest, glabrous, with opposite compound, rigid leaves; leaflets petiolulate, elliptical, five and four; calyx campanulate, slightly bilabiate; corolla white or rose, glabrous, puberulent on the inside, with five slightly unequal lobes; four didynamous stamens; ovary with two cells; capsule linear, elongated, subcylindric, with 3-keeled valves. This tree, very widely distributed, gives a beautiful wood for cabinetwork and is much sought after for wheelwright's work. The bark is considered a febrifuge." (*Lanessan, Plantes Utiles des Colonies Françaises.*)

38650 to 38658.

From Manila, P. I. Presented by the Manila City Nursery, through Mr. Henry H. Boyle, assistant horticulturist, Bureau of Agriculture, Manila. Received June 26, 1914.

38650. ADENANTHERA PAVONINA L. Mimosaceæ. **Coral-bean tree.**

See S. P. I. Nos. 31585 (under the name *Ormosia calavensis*), 36866, and 38117 for previous introductions and description.

"A large deciduous tree met with in the moist forests of Bengal, Assam, Bombay, Madras, and Burma, and readily propagated by seed. A gum is said to be afforded by it. The wood is powdered and used as a dye and is the red paste with which the Brahmans color their foreheads after bathing. Taylor says a decoction of both the seeds and wood is used in pulmonary affections and as an external application in chronic ophthalmia. The timber is much employed for house building and cabinetmaking. The seeds, which are sometimes eaten, are bright and therefore used for rosaries and as weights (about 4 grains). Ground to a paste with borax they form a useful cement." (*Watt, Commercial Products of India.*)

38651. BAUHINIA TOMENTOSA L. Cæsalpiniaceæ. **St. Thomas tree.**

See S. P. I. No. 18685 for previous introduction.

38650 to 38658—Continued.

Distribution.—A shrub with large showy yellow flowers in clusters found in tropical Africa and Asia and the islands of the Indian Ocean.

38652. CANANGIUM ODORATUM (Lam.) Baill. Annonaceæ.
(*Cananga odorata* Lam.) **Ylang-ylang.**

See S. P. I. Nos. 20908 and 35243 for previous introductions and description.

"A tree bearing a profusion of greenish yellow fragrant flowers with long, fringelike petals, from which the perfume *ilang-ilang* [ylang-ylang] is made. Leaves alternate, simple, entire, ovate oblong, finely acuminate, puberulous beneath; sepals 3; petals 6, in two series, narrowly linear; stamens many, linear, borne at the base of the ovary, the connective produced into a lanceolate, acute process; ovaries many; style oblong; ripe carpels about 12, ovoid or obovoid, black, 6 to 12 seeded.

"Bark of tree smooth, ashy; trunk straight normally, but in Guam often twisted out of shape by hurricanes. Its wood is soft and white and not very durable, but in Samoa the natives make small canoes of it, and the Malayans hollow out the trunks into drums or tom-toms. In Guam straight trunks of sufficient size for canoes are never found.

"This tree is found in Java, the Philippines, and in many islands of the Pacific. It is widely cultivated in the Tropics. Its introduction into Guam is comparatively recent; but the fruit-eating pigeons are spreading it gradually over the island. The natives sometimes use its flowers to perfume coconut oil. In Samoa it is very highly esteemed. Its fringelike flowers are there strung into wreaths and garlands by the natives, together with the drupes of Pandanus and the scarlet fruit of Capsicum.

"Ilang-ilang trees may be readily propagated either by cuttings or seeds. These should be planted in orchards or groves 8 meters apart. They thrive well on most tropical islands and in countries with moist, warm climates. About the third year the flowers appear. They bloom continuously, so that flowers and fruit may be always found on the same tree.

"From the flowers a pleasantly scented volatile oil is derived, known in commerce as the oil of ilang-ilang. In the Philippines and the East Indies this is sometimes adulterated with an oil extracted from the flowers of *Michelia champaca*. Ilang-ilang oil is obtained by steam distillation. In this process steam is generated in a small boiler and passed into a closed vessel containing the flowers. The mixed water and oil vapor as it leaves this vessel is condensed, and the oil separated from the water by decantation. In the Philippines, German distillers have obtained it in the ratio of about 25 grams from 5 kilometers of flowers (0.5 per cent). It finds a ready market in Paris, Nice, and Grasse, and is used also by perfumers in London, Leipzig, Berlin, and Frankfort. The best quality of oil is perfectly clear and very fragrant. The second quality is yellowish and turbid. A perfume is also derived from the blossoms by the method known as enfleurage, as with jasmines and other fragrant flowers. By this process the fragrant oil is absorbed by refined fats, butter, or oil spread over trays, on the surfaces of which the flowers are sprinkled. These are changed at frequent intervals and the fat 'worked' so as to present a fresh surface each time the new flowers are laid upon it. Finally it is scraped off the tray, melted, strained, and poured into jars in the form of a pomade. When oil is used in this

38650 to 38658—Continued.

process, layers of cotton are steeped in it, spread upon trays, and the flowers sprinkled over the surface, after which the oil is pressed out. Care should be taken to use fresh oil. Coconut oil is liable to become rancid very soon.

"The method used by the natives to extract the perfume is very simple. The flowers are put into coconut oil and allowed to remain there a short time, after which they are removed and replaced by fresh ones. The process is hastened by heating the oil. To avoid excessive heat the vessel used for the process is partly filled with water and the oil poured upon it. This prevents the temperature rising above that of boiling water, and the lower specific gravity of the oil keeps it separate from the water. The Macassar oil of commerce 'is coconut oil in which the flowers of *Cananga odorata* and *Michelia champaca* have been digested.' (*Spon's Encyclopedia, vol. 2, p. 1422. 1882.*) Ilang-ilang oil is becoming an important article of export from the Philippines. From the commercial monthly summary, published by the Bureau of Insular Affairs (May, 1904), it appears that the amount exported is steadily increasing." (*Safford, Useful Plants of Guam.*)

38653. DELONIX REGIA (Boj.) Rafin. Cæsalpiniaceæ.
(*Poinciana regia* Boj.) **Royal poinciana.**

"A rapid-growing tree with broad top and wide-spreading branches. Leaves gracefully bipinnate, 30 to 60 cm. long, with 10 to 20 pairs of pinnæ, each pinna with numerous small oval leaflets; flowers large, in large racemes, bright scarlet, the upper petal striped with yellow; calyx segments valvate; petals 5, clawed, obovate; stamens 10, free, exserted; pod flat, straplike, 15 to 60 cm. long. This handsome ornamental tree is a native of Madagascar. It has become widely spread, and is now found in all tropical countries. It yields a yellowish or reddish brown mucilaginous gum, containing oxalate of lime." (*Safford, Useful Plants of Guam.*)

38654. SAMANEA SAMAN (Jacq.) Merrill. Mimosaceæ. **Saman tree.**
(*Pithecolobium saman* Benth.)

"A handsome tree with spreading branches and bipinnate leaves. Pinnæ 2 to 6 pairs; leaflets 2 to 7 pairs, obliquely ovate or obovate oblong; corolla yellowish; stamens light crimson; flowers growing in globose clusters like crimson pompoms. Its pods contain a sweetish pulp and are relished by cattle and horses. In Honolulu it is one of the favorite shade trees." (*Safford, Useful Plants of Guam.*)

38655. BARYXYLUM INERME (Roxb.) Pierre. Cæsalpiniaceæ.
(*Peltophorum ferrugineum* Benth.)

"A medium-sized tree with dense rounded crowns, compound pinnate leaves and small leaflets. Flowers large, yellow, in large, terminal, erect, many flowered panicles, the pods flat, rather broad, with a narrow wing down one side. One of the finest shade trees in Manila, and quite frequently cultivated. Thrives well, gives a good shade, is not deciduous, and has abundant and beautiful flowers." (*Catalogue, Manila City Nursery.*)

38656. AGATI GRANDIFLORA (L.) Desv. Fabaceæ.
(*Sesbania grandiflora* Poir.)

Var. *coccinea.*

38650 to 38658—Continued.

The species is described (*Catalogue, Manila City Nursery*) as "a medium-sized or rather small tree, with compound, pinnate leaves with small oblong leaflets, and very large white flowers, 2½ to 5 inches long. The pods are long, slender, and pendulous. A desirable ornamental; not good for shade, however, as the top is rather thin. The large white flowers are used by the natives for food." The variety differs in having red flowers.

38657. LACTUCA SATIVA L. Cichoriaceæ. **Lettuce.**

"I have grown many varieties of lettuce and worked with a number of hybrids produced in the department. If my memory serves me well there is not one variety or one hybrid which will equal this lettuce when grown properly. It strongly resembles a cross between *Grand Rapids* and *Golden Queen*, a semiopen and semiheading variety. During its young stages of growth it has the brightest golden color of any lettuce of which I know. This character alone would make it especially valuable for garnishing dishes. Aside from this it is a very good table lettuce. This was obtained from Macao, a Portuguese possession off the coast of China. Sent to the Manila Bureau of Agriculture by Mr. Soares, of Hongkong, China." (*Boyle.*)

38658. CHRYSANTHEMUM sp. Asteraceæ. **Chrysanthemum.**

"A vegetable which is greatly used by the Chinese under the name of *Chung ow*. This vegetable is used by the Chinese in the same manner that we use kale and spinach. It is a very good substitute for both." (*Boyle.*)

38659 to 38663. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Warsaw, Russia. Presented by Mr. K. Drewitz, at the request of Mr. Edouard de Kostecki, director, Polish Agricultural Experiment Station. Received June 27, 1914.

Tubers of the following:

38659. *Warszawa.*
38660. *Twitez.*
38661. *Wohltmann.*
38662. *Bohun.*
38663. *Clio.*

38664 and 38665.

From Burma, India. Presented by Mr. Henry Ware Hale, Savannah, Ga. Received June 26, 1914.

38664. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

For previous introductions and descriptions, see S. P. I. Nos. 24450 and 33094.

"The bael fruit of India. A handsome tree, native to northern India, but widely cultivated throughout the Peninsula as well as in Ceylon, Burma, Siam, and Indo-China. The trifoliolate leaves, borne on wingless petioles, are thin in texture, probably owing to the fact that they are deciduous. Although not so hardy as the deciduous trifoliate orange of China and Japan, the bael fruit tree is said to endure a considerable degree of cold (20° F. or lower) in the drier parts of northwestern

38664 and 38665—Continued.

India. The fruit is greenish yellow, globular, or nearly so, varying from 2 to 6 (usually 4 to 5) inches in diameter. The fruit of the wild tree is considerably smaller than that of the cultivated form. The hard shell, one-eighth of an inch thick, is filled with the pale-orange, aromatic pulp, in which occur 10 to 15 long, narrow cells containing the seeds embedded in transparent, tenacious gum. These cells correspond to the segments of an orange, while the pulp is made up of the pith and the greatly thickened fleshy membranes separating the cells. The ripe fruit is much esteemed by the Hindus, many of whom consider it the best of the citrus fruits; the European residents in India often become very fond of it. Watt (*Dictionary of Economic Products of India, 1:123*) says: 'The fruit, when ripe, is sweetish, wholesome, nutritious, and very palatable and much esteemed and eaten by all classes. The ripe fruit, diluted with water, forms, with the addition of a small quantity of tamarind and sugar, a delicious and cooling drink.' The famous botanist, Roxburgh (*Flora Indica, 2:580*), says: 'The fruit is nutritious, warm, cathartic, in taste delicious, in fragrance exquisite.' On the other hand, W. R. Mustoe, superintendent, Government Archæological Gardens, Lahore, India, writes: 'The fruit is greatly prized for eating by the natives, but can scarcely be looked upon as palatable to the white man, except as a sherbet.' Sherbet is made from the mashed pulp, which is diluted with a little water and then strained into milk or soda water and sugared to taste. Sometimes a little tamarind is added to give a subacid flavor. All Indian medical authorities agree that the bael fruit has a most salutary influence on the digestive system. The ripe fruit is mildly laxative and is a good simple remedy for dyspepsia. The unripe fruit is a specific of the highest value for dysentery, but so mild that it can be given to children without danger. The bael fruit tree is widely cultivated in India and is found in nearly every temple garden. It is dedicated to Siva, whose worship can not be completed without its leaves. This promising fruit tree is now being tested at several points in the warmer parts of the United States." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

38665. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

"Seeds of an edible tuber bean. The tubers are usually the size of an orange. Flesh white, somewhat like a turnip. It is usually eaten raw, though I believe the Chinese sometimes cook it with pork and the Burmese with their curries. This vine requires a long season. The tuber is cooling and refreshing, being as juicy as an artichoke." (*Hale.*)

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Issued October 30, 1917.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1914.

(No. 40; Nos. 38666 to 39308.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1914 (NO. 40; NOS. 38666 TO 39308).

INTRODUCTORY STATEMENT.

The introductions in this inventory which appear most important from the brief descriptions received and from our limited experience with them are as follows:

Forage plants.—The Australian Rhodes grass, *Chloris virgata* variety *decora*, No. 39177, which has succeeded wonderfully on clay-pan, wind-swept, and sun-scorched soils when other grasses were difficult to establish; 12 species of grass, Nos. 38765 to 38776, from South Africa, some from the Kalahari desert region and others from the Transvaal and the Caldeon division of the coast region, which, if any of them prove as valuable as the Rhodes grass so successfully established here from the same general climatic area, will be decided acquisitions; a cowpea, No. 39143, called imboomba, grown by the Zulus of South Africa; a selected forage sugar cane called Quacsofoca, No. 39165, which in Queensland has proved superior to all the old standard sorts by its hardiness, yield, softness, and superior food value; grasses, *Erianthus rufipilus*, from the Himalayas, and *Pollinia fulva*, from the interior of Australia, Nos. 39010 and 39011, of one of which cattle are so extremely fond that they kill it by close cropping; and a smaller, finer stemmed grass somewhat resembling Para grass, *Eriochloa subglabra*, No. 38892, from Brazil called Capim Angolinha.

Cereals.—A collection of 13 forms of the grass *Coix lacryma-jobi*, Nos. 38868 to 38880, known as Job's-tears, certain of which produce soft kernels and are cultivated for food; 33 varieties of corn, Nos. 39228 to 39260, of the characteristic type from Copacabana, Peru; 5 varieties of the same cereal, Nos. 39158 to 39162, from Yachow, western China; a collection of sorghum varieties from Java, Nos. 39264 to 39282; 20 varieties of rice from the same tropical island,

NOTE.—This bulletin is a record of new or little-known seeds or plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

Nos. 39199 to 39218; and the 2 commercial rices of the Valencia rice-growing region of southeastern Spain, Nos. 38685 and 38686.

Vegetables.—A fine variety of the winter *pe-tsai* or Chinese cabbage, *Brassica pekinensis*, No. 38782, with very white heads of a mild flavor; 2 rhubarb species, Nos. 39049 and 39050, from Darjiling, the stems of one of which are used for tarts, which might be hybridized with *Rheum rhaponticum;* 22 varieties of cassava, Nos. 38947 to 38968, representing the most important sorts grown in the State of Bahia, Brazil; a variety of pumpkin, No. 38884, from the Oasis of Merv, Turkestan, which has withstood the heat and drought of Sonora, Mexico, better than other sorts tested there; a long blood-red carrot for pickling purposes, from Sianfu, China, No. 38786; and a shrubby species of indigo, *Indigofera dosua*, No. 39119, from the temperate Himalayas, the flowers of which are eaten as a potherb, while the plant is used for fodder.

Fruits.—Seedlings from a large feijoa fruit, No. 38970, which was 3½ by 2½ inches, a most unusual size for this promising Paraguayan fruit; the Pelese apricot from Somma Vesuviana in Italy, No. 38778, which, according to Dr. Gustav Eisen, the discoverer, is superior to the Royal, with very firm flesh and fine flavor and good shipping qualities; the wampi, *Clausena lansium*, No. 38708, a fruit related to the orange, but not as yet fruited in America, promising, furthermore, as a stock for the orange and grapefruit; a tropical grape, *Vitis tiliaefolia*, No. 38853, of vigorous habit and producing good fruits useful for jellies, which deserves to be used in the production of varieties of tropical grapes of good quality; six varieties of kuruba or Passiflora, Nos. 38881, 38882, and 39223 to 39226, which in Bogota are standard market fruits very highly esteemed by North Americans there, a red-fruited variety being particularly prized because of its decorative color; a new species of Eriobotrya, *E. petiolata*, No. 39111, related to the loquat, which may be of value as a stock for the latter, from the eastern Himalayan region; the Luisa mango, No. 38981, a fine type, presumably originating from Philippine seed in the island of Cuba; a quantity of litchi seeds gathered from bearing trees of this important fruit now growing in the Hawaiian Islands, No. 38779; *Poupartia axillaris*, No. 39136, a new fruit and shade tree from western Hupeh and Szechwan Provinces of China, which has proved hardy in Georgia; *Sorbus cuspidata* and *Sorbus insignis*, Nos. 39133 and 39134, two deciduous fruit trees native to the eastern Himalayas; *Dillenia pentagyna*, No. 39109, a deciduous tree from Oudh, Bengal, Assam, India, and Burma, the flowers, buds, and green fruits of which are eaten by the natives; and a remarkable rambling Rubus, *R. niveus*, No. 39130, from Kashmir and Sikkim, which is reported to bear a fruit superior to the English blackberry.

Trees for shade, for use around the dooryard, or for windbreaks.—The 80-foot tall, wild, pink-flowered cherry of Japan, *Prunus serrulata sachalinensis*, No. 38761, from the Arnold Arboretum, which deserves to be planted by the hundreds of thousands in our parks and on our private estates because of its hardiness and great beauty as a spring-flowering tree; the Nepal ash, No. 39014, which, though not hardy in England, may prove to be so in our Southern States; the East African cedar, *Juniperus procera*, No. 39185, from Eritrea, the wood of which, according to Schweinfurth, makes better pencils than that of the American juniper; the Swaziland tree, *Balanites maughamii*, No. 39196, a native of Portuguese East Africa, from the seeds of which a clear yellow odoriess oil of about the commercial value of cottonseed oil is obtained, but which, because of difficulties of extraction, has not been exploited; the lofty forest tree, *Picea smithiana*, No. 39040, from Darjiling, India, the wood of which is used for packing cases and for charcoal; the moderate-sized horse-chestnut from northern Bengal, *Aesculus assamicus*, No. 39102; the Mongolian linden, *Tilia mongolica*, No. 38810, from Tahuashan, China, which Mr. Meyer thinks will be hardy in our Northern States; three distinct varieties of the Chinese soap-bean tree, *Gleditsia sinensis*, Nos. 38800 to 38802, which are remarkably drought and alkali resistant and are very ornamental, carrying all winter their pods, which contain large amounts of saponin; and the cigar-boxwood tree of China, *Toona sinensis*, No. 38805, from Changli, which ought to make a beautiful shade and avenue tree and be useful in the Southwest for its timber. The small Nepalese hazelnut, *Corylus ferox*, No. 39106, with prickly cups but edible nuts, may find a use in the development of the hazelnut industry. The large bamboo, *Dendrocalamus hamiltonii*, Nos. 38736 and 39178, from Darjiling, which produces shoots 80 feet tall, the young sprouts of which are edible and from which a luxury called *gass-tenga* is made in Assam, may prove hardy in the Southern States and be used, as it is in India, for windbreak purposes. As dooryard shrubs for small homes may be mentioned an evergreen Cotoneaster, *C. microphylla*, No. 39008; 18 Himalayan species of Rhododendron, Nos. 39051 to 39068, among them a dwarf form, a yellow-flowered form, and one reported to be adapted for use in the parched and arid climate of Tibet; a Nepal barberry, *Berberis nepalensis*, No. 39105, which flowers from October to March in the mild climate of its native habitat; an autumn-flowering plant, *Polygonum vaccinifolium*, No. 39048, for rock work, which has proved a favorite in England, where its bright rose-colored flowers bloom from August to November; and three forms of the evergreen shrubs Euonymus, Nos. 38833 to 38835, from Tahuashan, in the Shensi Province of China.

Editorial note.—Chinese names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that reference work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 16, 1916.

INVENTORY.

38666 and 38667.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received July 1, 1914. Quoted notes by Mr. Hamilton.

38666. HIBISCUS RADIATUS Cav. Malvaceæ.

"Flowers yellow, crimson center. This plant is reputed a cure for fevers, etc., and a blood purifier. The whole plant is cut up, boiled, and the liquid drunk. Prefers sandy soil."

38667. LIVISTONA MUELLERI Bailey. Phœnicaceæ. **Fan palm.**

"Fan palm, 10 feet. Requires sandy soil."

38668. PIRATINERA ALICASTRUM (Swartz) Baill. Moraceæ. **Bread-nut tree.**

(*Brosimum alicastrum* Swartz.)

From Merida, Yucatan, Mexico. Presented by Mr. Julio Rendón, through Mr. P. L. Ricker, of the Bureau of Plant Industry. Received July 2, 1914.

See S. P. I. No. 34876 for previous introduction and description.

38669. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.**

(*Pennisetum typhoideum* Rich.)

From Zomba, Nyassaland, Africa. Presented by the Department of Agriculture, Zomba. Received June 29, 1914.

"*Machewere.* A local variety of spiked millet."

38670. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**

(*Sorghum halepense* Pers.)

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received July 1, 1914.

"The maturing of seeds of this grass seems to be very irregular, perhaps because we are now in our rainy season." (*Argollo Ferrão.*)

38671 to 38674.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received July 2, 1914. Quoted notes by Mr. Regnard, except as otherwise indicated.

38671. ALEURITES FORDII Memsley. Euphorbiaceæ. **Tung tree.**

"Large, spreading tree, very ornamental, both for its foliage and large pinkish white flowers. I have sent you by this mail per sample post two positive plates of *Aleurites* sp., representing flowers and young tree, about 20 feet high, which bloomed profusely during the month of November at my up-country residence. The blossoming generally precedes the coming out of leaves, but this year, owing to more active vegetation, the flowers

38671 to 38674—Continued. (Quoted notes by Mr. G. Regnard.)

and leaves showed at the same time. The seeds will be analyzed in our Department of Agriculture, and I shall give you the result. It is to be feared that the crop of seeds will be poor, as we have had very windy weather which has been an obstacle to the pollination."

38672. ROSCHERIA MELANOCHOETES Wendland. Phœnicaceæ. **Palm.**

"Fruit tree, from Saigon, Indo-China."

38673. PHOENICOPHORIUM BORSIGIANUM (Koch) Stuntz. Phœnicaceæ. (*Stevensonia grandifolia* Duncan.) **Palm.**

See Hooker, Curtis's Botanical Magazine, plate 7277, for full description.

38674. ROLLINIA MUCOSA (Jacq.) Baillon. Annonaceæ. (*Rollinia sieberi* A. DC.)

"Fruit tree, very large fruited."

"A small tree with the habit of *Annona reticulata* L. with large edible fruit not equal in flavor to that of the cherimoya or sugar-apple." (*Safford, Classification of Annona, Contr. U. S. Nat. Herb., vol. 18, p. 58–60, 1914*, which see for full description and illustration.)

38675. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie. Scions received July 1, 1914.

38676 to 38684.

From Cuzco, Peru. Presented by Dr. A. A. Giesecke, president, University of Cuzco. Received July 1, 1914.

38676 to 38678. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.** (*Prunus persica* Stokes.)

38676. Special white. 38678. Special white.

38677. *Doncielitas.*

38679. AMYGDALUS PERSICA NECTARINA Ait. Amygdalaceæ. **Nectarine.**

38680 to 38683. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.** (*Prunus persica* Stokes.)

Seeds of four distinct varieties of peaches introduced, like the preceding, for the work of Mr. W. F. Wight in breeding rosaceous plants.

38684. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Black cherry.**

"Not only is the rum cherry (*Prunus serotina*) widely spread in North America, but one of its forms reaches through Mexico, across the Isthmus of Panama, as far south as the mountains of Peru. Near Quito, in Ecuador, where this tree grows on the Equator, it appears to be in fruit the whole year round. This is *P. salicifolia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 251.*)

38685 and 38686. ORYZA SATIVA L. Poaceæ. **Rice.**

From Spain. Presented by Mr. Claude I. Dawson, American consul, Valencia, Spain. Received July 2, 1914.

"Two strains of the *Benlloch* (or *Belloch*) variety. The commercial classes of rice in the Valencia region, especially along the north and south banks of the Jucar River, or center of the rice district, are at present *Benlloch* (or *Belloch*)

38685 and 38686—Continued.

and *Amonquili*. During 1913 the two were cultivated in the proportion of 80 per cent for the first and 20 per cent for the second, and in the season just beginning the *Benlloch* will certainly be overwhelmingly preferred, in view of repeated excellent results obtained by experiment stations and in actual cultivation. The *Benlloch* (or *Bellloch*) variety is of undetermined origin and very little is known here concerning it. It was introduced and distributed to farmers by the agricultural experiment station at Burjasot, near Valencia (Granja Escuela práctica de Agricultura de Valencia). It was easily and quickly domesticated and appears to be peculiarly adapted to this soil. It germinates quickly in the seed bed and stands transplanting according to the usual practice in this region. The grain gives a large percentage of rice flour in milling and the straw is firm and remains sound from beginning to end. One disadvantage is that it matures somewhat later than other varieties. It is also said to be inferior in food value to the *Bomba* variety. The yield of *Benlloch* rice in 1913 was reported as being unusually high. In the municipal division of Villanueva de Castellon of the Ribera Alta of the Jucar River many fields produced 900 kilos per hanegada (10,800 kilos per hectare, or about 9,620 pounds per acre). Some fields gave even better results, reaching 1,000 kilos per hanegada (12,000 kilos to the hectare, or 10,688 pounds to the acre). According to report, this rice was sold at an average price of 27 pesetas per 100 kilos ($4.86 per 220 pounds) on the thrashing floor. It is this wonderful productivity which has popularized the *Benlloch* variety, since it is to this condition more than the class that all the work and hopes of the Valencia rice cultivator are subordinate." (Extract from *Mr. Dawson's letter dated Apr. 25, 1914.*)

38687 to 38693.

From Russia. Secured by Mr. E. Brown, of the Bureau of Plant Industry. Received July 3, 1914. Quoted notes by Mr. Brown, except as otherwise indicated.

38687 to 38691.

From Ekatarinodar, Kuban Government, Russia. Secured from Mr. A. N. Rockel.

38687. TRITICUM AESTIVUM L. Poaceæ. **Winter wheat.** (*Triticum vulgare* Vill.)

"No. 1. Best yielding variety in the Kuban district, from 30 to 60 bushels per acre. Seeded at the rate of 1½ bushels per acre from August till November." (*Rockel.*)

38688. HORDEUM DISTICHON NUTANS Schubl. Poaceæ. **Winter barley.**

"No. 2. Seeded September to November in the south and August to September in the north; yield 50 to 80 bushels per acre." (*Rockel.*)

38689. BRASSICA ALBA (L.) Boiss. Brassicaceæ. **Yellow mustard.**

"No. 4. Gives two crops in summer. Seeded in February to March High oil content." (*Rockel.*)

38690 and 38691. ZEA MAYS L. Poaceæ. **Corn.**

38690. "No. 5. One of the small early types (*Cinquantino*) of flint corn raised in the Kuban district."

38691. "No. 6. One of the small early types (*Cinquantino*) of flint corn, called *Perl*, raised in the Kuban district."

38687 to 38693—Continued. (Quoted notes by Mr. E. Brown.)

38692 and 38693.

From the estate of A. Vassal, "Klarofskoy," Nogais Steppe, Government of Taurida, Russia.

38692. SECALE CEREALE L. Poaceæ. **Winter rye.**

"No. 7. This is the best variety grown in the region."

38693. AVENA SATIVA L. Poaceæ. **Oats.**

"No. 8. This is the best variety grown in the region."

38694. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Mexico. Presented by Mr. Charles F. O'Brien, Los Angeles, Cal. Received at the Plant Introduction Field Station, Chico, Cal., May, 1914.

"Seeds from a very choice variety of Mexican cherimoya, grown in the mountains east of Culiacan, Sinaloa." (*O'Brien.*)

38695. ARAUCARIA ARAUCANA (Mol.) Koch. Pinaceæ. **Pehuen.**

From Barbacena, Minas Geraes, Brazil. Presented by Mr. Frank R. Brainerd, Experiment Station. Received July 8, 1914.

"An evergreen tree, 50 to 80 feet high, of pyramidal or rounded form, with an erect cylindrical bole, 1½ to 2½ feet thick, all but the oldest parts prickly with living leaves or the remains of dead ones. Branches produced in regular tiers of five to seven. Leaves very uniform, ovate, with a slender spine-tipped point, from 1 to 2 inches long, one-half to 1 inch wide; hard, rigid, and leathery; dark glossy green except at the paler growing tips of the branches, and with numerous stomatic lines on both surfaces. The leaves are arranged spirally on the branch, overlapping at the broad, stalkless base, and are very densely packed (about 24 to 1 inch of stem); they remain alive for 10 to 15 years, and then persist for an indefinite time dead. Male and female flowers are usually borne on separate trees, but not invariably; the former are produced on egg-shaped or cylindrical catkins 3 to 5 inches long, the scales lanceolate, densely packed, with the slender points reflexed, the pollen being shed in early July. The female cones take two seasons to develop, appearing in the spring of one year and shedding their seeds in August or September of the next; they are globose, and usually 5 to 7 inches thick. Seeds conical, 1½ inches long, three-fourths inch wide.

"Native of Chile; originally discovered about 1780, and introduced to England by Archibald Menzies in 1795. Menzies had, two or three years previously, when attached to Vancouver's voyage of survey, pocketed some nuts put on for dessert whilst he and the ship's officers were dining with the Viceroy of Chile. He sowed these nuts on board ship, and ultimately landed five plants, which proved to be the Araucaria, alive in England. One of the five existed at Kew until 1892. The Chile pine, whilst hardy in most parts of the British Isles, attains its finest development in the softer, moister counties, and in good free soil. It should always be raised from seeds, fertile ones of which are now regularly produced in several gardens. At Castle Kennedy I have seen seedling plants springing up naturally near the trees from which seeds had fallen. *Araucaria imbricata* is of peculiar interest as the only tree from the south of the Equator that attains to timber-producing size in the average climate of the British Isles. It becomes over 100 feet high and 7 feet in diameter of trunk in Chile, deriving its name from the Arauco Province (inhabited by the Araucanos Indians), where it was first found. A species is

38695—Continued.

found in Brazil, and several others in Australia and New Caledonia—all tender. In its general aspect, and especially as compared with the ordinary types of northern vegetation, the Chile pine is the most remarkable hardy tree ever introduced to Britain. It should always be grown as an isolated tree, or in an isolated group, as it associates very badly with ordinary garden vegetation. It was first introduced in quantity to this country [England] in 1844 by Wm. Lobb." (*W. J. Bean, Trees and Shrubs in the British Isles, vol. 1, p. 199,* under *Araucaria imbricata.*)

38696 to 38698.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received July 9, 1914. Quoted notes by Mr. Regnard.

38696. LINOMA ALBA (Bory) O. F. Cook. Phœnicaceæ.

Mascarene cabbage palm.

"A palm that attains a height of 50 feet. Young plants have dark-red margins on new leaves, which diminish when the tree becomes older. This true red variety is getting very scarce now, as almost all the trees newly planted are a cross mixture with the white. These seeds were gathered on the true red sort in a wide plantation of them. The cabbage of this palm is commonly eaten here and has quite a delicate flavor."

For a discussion of this Mascarene cabbage palm, see the Journal of the Washington Academy of Sciences, vol. 7, p. 123, 1917.

38697. HYOPHORBE AMARICAULIS Martius. Phœnicaceæ. **Palm.**

"Said to grow 60 feet, though I have never seen it over 30 feet. This palm is very common in Round Island and has spread now in Mauritius, where it is planted as a curious ornamental plant only. Trunk bottle shaped."

38698. KIGELIA PINNATA (Jacq.) DC. Bignoniaceæ.

"The sausage tree, called by the natives here *Calabasse d'Amerique,* though a spreading tree of tropical Africa. The quite heavy and large fruit, 20 inches and over, sometimes 4 feet, are produced on very long cordlike stalks, thus hanging in the air, where they dangle for several weeks. This tree is held sacred by the savage tribes of Nubia. The wood is very hard and durable and easily worked."

38699 to 38707. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Nice, France. Presented by M. Robert Roland Gosselin, through Mr. William Dulany Hunter, American consul, Nice. Received July 10, 1914.

Cuttings introduced at the request of Dr. David Griffiths for his work in monographing the genus Opuntia in connection with studies of its forage value.

38699. OPUNTIA SPINULIFERA Salm-Dyck.

See S. P. I. No. 33335 for previous introduction.

38700. OPUNTIA FICUS-INDICA (L.) Miller.

Var. *costaricensis.*

38701. OPUNTIA DECUMANA (Willd.) Haw.

See S. P. I. No. 8916 for previous introduction.

38699 to 38707—Continued.

38702. OPUNTIA GYMNOCARPA Weber (?).

These cuttings were received under the name *Opuntia cafayatensis.*

38703. OPUNTIA CAMUESSA Weber.

See S. P. I. No. 33334 for previous introduction.

38704. OPUNTIA ROBUSTA LARREYI Weber.

See S. P. I. No. 33328 for previous introduction.

38705. OPUNTIA sp.

38706. OPUNTIA GYMNOCARPA Weber.

See S. P. I. No. 33329 for previous introduction.

38707. OPUNTIA STREPTACANTHA Lem.

See S. P. I. No. 33327 for previous introduction.

38708. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. Wampi.

(*Clausena wampi* Oliver.)

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Experiment Station. Received July 9, 1914.

"These seeds were kindly donated to the station by Mr. A. J. Campbell, of Honolulu, who has a wampi tree which bears a heavy crop of excellent fruit." (*Wilcox.*)

"A low, spineless tree, with spreading branches; leaves spirally arranged, pinnate; leaflets 5 to 9, ovate elliptical, 3 to 5 inches long, petiolate, light green, shiny above; flowers 4 to 5 parted, small, white, in large terminal panicles; ovary villous, 5-celled, with 1 ovule in each cell; style short; stamens 10; fruit ovate globose, about 1 inch long; skin glandular, pubescent; seeds green. The wampi is a native of southern China, where it is commonly grown for its fruits. It is cultivated to some extent in Hawaii and could probably be grown in the warmer parts of Florida and California. It can be grafted on grapefruit and other species of Citrus, which makes it desirable to test it as a stock for common citrous fruits. (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

38709 to 38731.

From Angeles National Forest, Cal. Presented by the Forest Service, Department of Agriculture, Washington, D. C., on the conclusion of eucalyptus planting in the national forests. Notes adapted from A. J. McClatchie, Eucalypts Cultivated in the United States, Bulletin 35, Bureau of Forestry, are given abridged credits, with page citations.

Most, if not all, of this seed was collected from California-grown trees.

38709 to 38730. EUCALYPTUS spp. Myrtaceæ.

38709. EUCALYPTUS ALPINA Lindley. **Alpine gum.**

This tree, which is commonly known as the *Alpine gum*, is a small evergreen tree which reaches a height of 10 or 15 feet. The flowers are sessile in the leaf axils, and solitary or few. They are white in color. This rare and interesting alpine species might possibly do well for street planting. (Adapted from *W. R. Guilfoyle, Australian Plants*, and *Bailey, Cyclopedia of American Horticulture.*)

38709 to 38731—Continued.

38710. EUCALYPTUS BICOLOR A. Cunningh. **Cooburn.**

"This species is found growing in south Australia and eastern Australia to the Gulf of Carpentaria. This tree has a variety of local names, some of which are *Cooburn*, *box*, *black box*, *yellow box*, *bastard box*, and *grey gum*. It is also called *slaty gum*, from the gray and white patches on the bark.

"The timber is hard and durable, very lasting underground, and of a red color. It is used for fencing, rough buildings, and sleepers, also for shafts, poles, and cogs. It is more easily worked than the generality of ironbarks. The large trees are frequently hollowed and decayed at heart. This tree attains a height of between 100 and 120 feet and a basal diameter of 24 to 36 inches." (*Maiden, Useful Native Plants of Australia, p. 471,* under *E. largiflorens.*)

38711. EUCALYPTUS CITRIODORA Hook. **Lemon-scented gum.**

This is a handsome, fast-growing tree, soon becoming tall and slender. In favorable situations in the Southwest it attains a height of 60 to 100 feet in 10 to 15 years. The trunk is straight and even, the foliage being confined mostly to the lofty summit. The bark is light colored, faintly mottled by indentations that indicate where thin patches have flaked off. This mottling of the trunk, together with the stately character of the tree, the graceful foliage, the profuse blóom, and the fragrant leaves make this eucalypt one of the most attractive of the genus. The leaves of the tree are long, quite narrow, and equally shiny green on both sides. The foliage possesses a pleasant odor, closely resembling that of a lemon, giving the tree its varietal name *citriodora*. The tree thrives in the frostless coast regions, but is not suited to the dry interior valleys. It is especially sensitive to low temperatures. The wood is of a grayish, brownish, or yellowish tint, flexible, strong, and durable. The timber is used for fencing, implement handles, shipbuilding, paving, railway ties, bridge building, carriage making, and for the manufacture of railway coaches in Australia. The great value of this wood is due to its strength, elasticity, and beauty. Its profuse bloom makes it valuable also for bee pasture. (*McClatchie, p. 54, 55.*)

38712. EUCALYPTUS PAUCIFLORA Sieber. **White gum.**

This tree is of medium size; rarely exceeds 75 feet in height and 3 feet in diameter. It is a stately and quite handsome tree. The main branches are usually spreading and the smaller branches drooping. The bark is smooth and grayish. The leaves are shiny, the same color on both sides, and quite thick. The medium-sized flowers are in compact clusters. The shape of the fruits is that of the broader part of an egg. The tree does best in regions of moderate temperatures a short distance from the coast. It is resistant to frost. In Australia it grows from the base to near the top of the highest mountains. It will not endure drought nor a hot, dry atmosphere, though supplied with plenty of water artificially. The timber is comparatively soft, splits fairly well, but is rather brittle. It is not useful for underground purposes, but makes a good fuel. (*McClatchie, p. 55,* under *E. coriacea.*)

38709 to 38731—Continued.

38713. EUCALYPTUS CLADOCALYX F. Muell. **Sugar gum.**
(*Eucalyptus corynocalyx* F. Muell.)

This tree attains a fair size and is commonly symmetrical and erect. Its growth is quite rapid from an early age. The usual height ranges from 50 to 100 feet, and in Australia the trunk is said to often attain a diameter of 5 or 6 feet. As a rule the trunk is straight, with only a slight taper. The bark is left smooth by the continuous flaking off of the patches or strips. The bark of the main stem is usually a deep cream color, that of the branches darker before shedding, and of the young twigs quite red. This Eucalyptus furnishes a timber that is very durable as railway ties, as posts, and for other underground situations. The wood warps very little in drying and when dry is very hard. It is also useful for the naves and felloes of wheels. (*McClatchie, p. 57, 58.*)

38714. EUCALYPTUS VIMINALIS Labill. **Manna gum.**

Both in Australia and in the Southwest the individuals of this species make rapid growth and commonly become trees of large size. Those growing in the Southwest give promise of eventually attaining a height of 300 feet and a trunk diameter of 15 to 30 feet. The surface of the bark varies considerably in appearance. That of the trunk and main branches is commonly persistent, but from some trees long, slender strips are shed, leaving the trunk smooth and of a greenish or reddish creamy color. The persistent bark is brownish in color, furrowed and rough. This bark has the peculiar characteristic of exuding a honeylike substance, called 'lerp' by the natives, but better known as 'manna,' when the bark is punctured or wounded by insects. This Eucalyptus grows under quite a variety of climatic conditions. In the Southwest it thrives near the coast, on dry mesas, in the elevated valleys of the interior, and in the hot valleys of much of the desert region. The timber of this tree is less valuable than most of the eucalypts. It is not durable under ground and does not make good fuel. In Australia it is used for shingles and for rough building material. The tree can be grown for a forest cover, for windbreaks, for fuel, and for shade in many localities where species producing a better timber will not grow. (*McClatchie, p. 82, 83.*)

38715. EUCALYPTUS GLOBULUS Labill. **Blue gum.**

This species is the best known of the eucalypts and in many respects the best known tree in all the world. It is the third tallest of the species of Eucalyptus, the usual height in Australia being 200 to 300 feet. In California, where trees can be found 30 or more years old, many have attained the height of 150 feet, and a diameter of 3 to 6 feet during these years. This remarkable tree has the power of adapting itself to a variety of climatic conditions. It thrives both in moist, warm regions, and in quite hot, dry ones. It makes a good growth both in low lands and in dry, stony uplands. This species is the most generally useful of all the eucalypts. The timber of this tree is of a rather pale color, is hard, heavy, and very strong and durable. It is fairly straight grained and splits easily. In Australia it is used for shipbuilding, for carriage making, and in the manufacture of agricultural implements. It is also used in

38709 to 38731—Continued.

bridge building, for telegraph poles, and for railway ties. It is also the one that is used principally in the manufacture of eucalyptus oil in California. (*McClatchie, p. 61–63.*)

38716. EUCALYPTUS GONIOCALYX F. Muell. **Mountain spotted gum.**

This tree commonly attains a good size, in some situations in Australia reaching a height of 300 feet, with a diameter of 6 to 10 feet. The leaves of the adult tree are long and quite slender, the two sides being similarly colored. The flowers are nearly stemless, in small clusters borne on flattened stalks. This species grows well in the coast regions of California, but so far as known has not been tested in the dry, hot valleys of the interior, or other similar situations. In Australia it ascends to elevations of 4,000 feet, and is therefore a promising species for the mountains of the Southwest. The tree furnishes a hard, tough wood used by wheelwrights, by boat builders, and for general building purposes. It is very durable in the ground and is consequently useful for railroad ties, for posts, and for other purposes in underground situations. It also makes an excellent fuel. (*McClatchie, p. 63, 64.*)

38717. EUCALYPTUS GOMPHOCEPHALA DC. **Tooart tree.**

The tree is rather stocky and is usually symmetrical. The bark of the trunk is dark gray, rough, and persistent. From the branches the bark flakes off in strips, leaving the surface smooth and light colored. The twigs are reddish yellow. The leaves are thick and shining and somewhat leathery, the upper surface being darker than the lower. The flowers are of large size. This tree thrives along the coast and does fairly well in the dry, interior valleys. It has not been grown extensively enough yet to determine what degrees of heat and cold it will endure in America. The tree furnishes a heavy wood that is very tough and strong. It is one of the strongest timbers in the world. The grain is so close and curled or twisted that it is not easily split. The timber is used principally in shipbuilding and for bridges. It is very durable in all kinds of weather and in a great variety of situations. (*McClatchie, p. 63.*)

38718. EUCALYPTUS LEUCOXYLON F. Muell. **White ironbark.**

Trees of this species attain fair size in a comparatively short time and when full grown are large. They are apt to grow out of the perpendicular, and the trunks are frequently crooked. The wood is white and straight grained. The foliage has a pleasing bluish cast and is well distributed over the tree. The leaves of the young seedlings are broad, opposite, stemless, or short stemmed. This tree will grow in a greater variety of climates than most eucalypts; in fact, there are few situations in the Southwest in which it will not thrive. It grows vigorously on the coast, on the interior plains and foothills, and in the dry, hot desert valleys of the interior. On account of its adaptability to so great a variety of climatic conditions, it can be used as a forest cover for almost all kinds of situations and thus supply a timber useful for a large number of purposes. It can be grown for fuel and for other purposes that the ordinary blue gum serves where the latter will not grow. (*McClatchie, p. 66.*)

38709 to 38731—Continued.

38719. EUCALYPTUS MACRORHYNCHA F. Muell. **Victoria stringy bark.**

This tree is said to attain a fair height in Australia, but the specimens growing in the Southwest do not yet give promise of attaining great size, due probably to being planted at too low an elevation. The tree has not proved to be a very symmetrical one. The bark of the trunk and branches is thick, fibrous, and persistent, usually a dark-gray color. This species thrives at the coast, and is said to grow in Australia on comparatively sterile mountain ranges. It is, in Australia, essentially a mountain species, seldom growing on the plains. It will not endure dry, hot climates. The bark of the tree being rough and fibrous, it is used extensively in Australia for roofing sheds, stables, and other outbuildings. The fibers are also sometimes used for strings. The tree furnishes a wood that is hard and durable and easily split. It is useful for lumber, for fencing, and for shingles and fuel. The tree is a promising one as a forest cover for mountain ranges of the Southwest. (*McClatchie, p. 67.*)

38720. EUCALYPTUS OBLIQUA L'Herit. **Stringy bark.**

This is a tall, straight-stemmed tree, sometimes attaining a height of 300 feet in Australia, with a stem diameter of 10 feet. The bark is fibrous and persistent on both the trunk and the branches, being of a somewhat grayish color. The leaves of the young trees are commonly broad, but they become narrower as the tree increases in age. This species grows fairly well at or near the coast, doing best, however, some distance inland, but it does not thrive in the dry, hot valleys of the interior. It will thrive in light, barren soils, but does not endure severe drought. The timber of this species is straight and easily split. In Australia this tree furnishes much of the hardwood lumber used for rough building purposes. It is also used extensively for fence rails, palings, and shingles. The bark has been used for paper making. (*McClatchie, p. 70.*)

38721. EUCALYPTUS PIPERITA Smith. **Peppermint stringy bark.**

The trees of this species attain a considerable height and are commonly erect and shapely. The grayish bark of the trunk is fibrous and persistent. The leaves of the adult tree vary in shape from a broad lance shape and very unequally sided to a narrow lance shape and quite straight leaf. The flowers are about medium size, in compact clusters of 6 to 12. The tree makes a fairly rapid growth near the coast and in cool inland situations, but does not endure dry, hot climates, and will not tolerate heavy frosts. The timber is readily split and is used for fencing and general building purposes. It is one of the species eligible for planting as a forest cover on mountain sides where it is not too dry nor subject to too heavy frosts. (*McClatchie, p. 72, 73.*)

38722. EUCALYPTUS POLYANTHEMOS Schauer. **Red box.**

This is commonly a medium-sized tree, although it is said occasionally to reach a height of 250 feet in Australia. It is not a rapid grower, and few of the American specimens have attained a diameter of over 1 foot. It commonly sends up a single trunk, but quite frequently several stems arise from the same base. The tree is of a spreading habit, and with its characteristic foliage and profuse

38709 to 38731—Continued.

bloom presents a very pleasing appearance. The bark of the trunk and branches is persistent, somewhat furrowed, and grayish in color. This species thrives under a great variety of climatic conditions. It grows at and near the coast, in the foothills, on the mountain sides, and in the hot, dry valleys of the interior. The timber of this tree is very hard, strong, and durable, being used in Australia for railroad ties, for cogs, and for the parts of wheels. It also makes an excellent fuel. Its habit of growth and pleasing aspect render it a good shade tree. It can also be used as a windbreak in localities where faster growing trees will not endure the climatic conditions. (*McClatchie, p. 73.*)

38723. EUCALYPTUS AMYGDALINA Labill. **Peppermint gum.**

In its native country the individuals of this species are the tallest of the genus. This eucalyptus is one of the most remarkable and important of all plants. Viewed in its marvelous height when standing forth in its fullest development on the slopes or within glens of mountain forests, it represents probably the tallest of all the trees of the globe. Considered as a hardwood tree of celerity in growth, it ranks among the very foremost. The tree endures low temperatures, but is injured by dry heat. It does best near the coast and at moderate elevations in well-watered mountain regions. The timber is not as valuable as that of many other eucalypts, but is said to be useful for shingles, rails, and for planking ships. It is comparatively light, unlike many other eucalypts, floating on water. It does not usually last well underground, nor does it furnish fuel of good quality. The leaves are a source of eucalyptus oil. (*McClatchie, p. 51, 52.*)

38724. EUCALYPTUS RESINIFERA Smith. **Kino eucalypt.**

This is a tree of fair size, when full grown, reaching a height of 100 feet. It is usually erect and symmetrical. The bark of the trunk is dark reddish, fibrous, and persistent, resembling considerably that of the stringy barks. The bark of the branches is more or less deciduous. The wood is a rich red color, resembling true mahogany, and is very heavy. This Eucalyptus, known as the red mahogany, grows quite well in the coast regions of California, but does not thrive in the dry interior valleys. It does not resist severe frosts, nor does it endure high temperatures in a dry atmosphere. The tree furnishes a timber that is very strong, hard, and durable. It is used in Australia for piles, posts, paving, shingles, and general building purposes. (*McClatchie, p. 74, 75.*)

38725. EUCALYPTUS LONGIROSTRIS Muell. **Red gum.**
(*Eucalyptus rostrata* Schlecht.)

Individuals of this species make a fairly rapid growth and are commonly above medium size. The tree varies considerably in habit and appearance, in some cases being erect and stately and in other cases unsymmetrical and irregular in growth. This red gum is one of the leading forest trees of the Australian continent. The tree is commonly about 100 feet high in Australia, but is reported under favorable circumstances to grow to double that height, with a trunk diameter of 6 to 12 feet. The red gum grows under a great variety

38709 to 38731—Continued.

of climatic conditions. It is scattered over the southeastern part of Australia, growing there in a great variety of situations. While it prefers moist river bottoms with an equable climate, it will endure much heat, severe frosts, and considerable drought. The red gum furnishes a timber that is very valuable for many purposes. When freshly cut the wood is a rich red color that grows darker as it is exposed to the air. It is close grained, the fibers being interlocked, thus rendering it quite difficult to split. In America the principal uses made of the red gum have been for fuel and for posts. On account of its profuse bloom it is a good honey-yielding tree, both in Australia and in America. (*McClatchie, p. 76, 77.*)

38726. EUCALYPTUS SIDEROXYLON A. Cunningh. **Red ironbark.**

The red ironbark is a tree of medium to large size. It usually grows erect, with an even trunk, having numerous side branches, especially toward the top. It never grows to a great height. The bark is the hardest and the darkest of the ironbarks, the color usually being a dark red or brown. It is furrowed and cracked and studded with beads of the kino that exudes from it. The whole appearance of the tree, with its rough, dark bark, its silvery narrow leaves, and daintily colored flowers, is quite distinctive, contrasting strongly with the smooth-barked broader leaved species of the genus. The wood is dark red, very hard, and heavy. The leaves are narrow lance shaped, often curved, and usually have a more or less evident silvery surface. The red ironbark is one of the very useful eucalypts. While the timber is not prized as highly in Australia as that of other ironbarks, it is nevertheless valuable for many purposes. Its principal use is for bridge construction, for railway ties, for girders and large beams in building, for joists, for posts, for the hubs, spokes, and shafts of vehicles, and for a great variety of other purposes where strength and durability are required. (*McClatchie, p. 80.*)

38727. EUCALYPTUS VIRGATA Sieber.

This is an erect shrub or a small tree with smooth or slightly ribbony bark and pale-colored wood, and it is found along the eastern coast of New South Wales, Australia. The mature leaves are lance shaped, generally about 4 inches long, of a thick, very coriaceous texture, and equally green and shining on both sides. The flowers occur usually six in each head, and the nearly globular fruits are about half an inch in diameter. The timber from this eucalypt is of an inferior quality. A singular fact about this eucalypt is that it does not seem to have any distinctive native name, being usually called *scrubby gum*, a name also applied to many other species. (Adapted from *J. H. Maiden, Forest Flora of New South Wales, vol. 3, p. 85–89, pl. 94.*)

38728. EUCALYPTUS TERETICORNIS Smith. **Flooded gum.**

This tree attains a good size under favorable conditions, but it is commonly not much above 100 feet in height and 6 feet in diameter in Australia. In the Southwest it makes a rapid growth and gives promise of reaching fully the size the trees do in their home. The species thrives under a variety of climatic conditions.

38709 to 38731—Continued.

It grows best near the coast but endures the dry heat of the interior valleys. The trees of this species furnish an excellent red-colored timber that is very hard, heavy, and durable. It is used for general building purposes, for shipbuilding, for wheelwright work, for railroad ties, for telegraph poles, posts, fencing, and fuel. (*McClatchie, p. 81, 82.*)

38729. EUCALYPTUS VIMINALIS Labill. **Manna gum.**

See S. P. I. No. 38714 for previous introduction and description.

38730. EUCALYPTUS MUELLERIANA Howitt. **Yellow stringy bark.**

"This is perhaps only a variety of *E. pilularis;* bark more fibrous or stringy, the inner bark yellow and imparting a yellow stain to the wood; juvenile leaves often with tufts of hairs; adult leaves glossy above; lid blunt or slightly pointed; fruit typically one-half inch thick." (*H. M. Hall. In Bailey, Standard Cyclopedia of Horticulture.*)

38731. SYNCARPIA GLOMULIFERA (Smith) Niedenzu. Myrtaceæ.
(*Syncarpia laurifolia* Ten.) **Burra murra.**

"This tree, which is a native of Queensland and New South Wales, is locally known as the *turpentine tree.* It attains a height of 200 feet and a stem girth of 30 feet. It is a quick grower and well adapted for shading roadsides. The wood is very durable and is mostly used for flooring and for cabinetmaking, as it takes a high polish. It is one of the most valuable known timbers for piles in salt or fresh water. It is also used in the construction of railway sleepers, in shipbuilding, and for other purposes where a strong, durable wood is required. The wood is almost fireproof." (*Mueller, Select Extra-Tropical Plants, p. 521.*)

38732. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ.
(*Pennisetum typhoideum* Rich.) **Pearl millet.**

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell. Received July 10, 1914.

African millet.

38733 to 38741.

From Darjiling, India. Collected by Mr. L. J. Mackintosh, Clover Cot, at the request of Mr. J. F. Rock, collaborator of the Bureau of Plant Industry.

38733. ABIES SPECTABILIS Lambert. Pinaceæ. **Fir.**
(*Abies webbiana* Lindl.)

"A lofty evergreen tree, met with in the Himalayas from the Indus to Bhutan; in the northwest Himalayas between 7,000 and 13,000 feet; in the inner ranges of Sikkim and Bhutan, between 9,000 and 13,000 feet; and in the outer ranges not below 10,000 feet. This tree yields a white resin which is sometimes medicinally used in India. The resin, mixed with oil of roses, when taken internally produces intoxication. This mixture is used externally for headaches, neuralgia, etc. The timber made from this tree is not durable when exposed to the weather, but seems

38733 to 38741—Continued.

to last well in the form of shingles in Sikkim, whence it is sometimes exported to Tibet for roofing. At Murree shingles are said to last 8 to 10 years and at Kulu 3 to 6 years. It is also much used for construction purposes. Very little information exists regarding the rapidity of its growth. The bark is used for roofing shepherds' huts, and it is also made into troughs for the salt given to the sheep grazing on the high Himalayas." (*Watt, Dictionary of the Economic Products of India, vol. 1, p. 5.*)

38734. ACER HOOKERI Miq. Aceraceæ. **Maple.**

"This species, which is a native of the eastern temperate Himalayas, is found growing at altitudes of 8,000 to 10,000 feet around Sikkim and Bhutan. Plants with copper-colored foliage are not uncommon around Darjiling. This tree attains a height of 40 to 50 feet." (*Watt, Dictionary of the Economic Products of India, vol. 1, p. 69.*)

38735. ALBIZZIA CHINENSIS (Osbeck) Merrill. Mimosaceæ.
(*Albizzia stipulata* Boiv.)

See S. P. I. No. 25782 for previous introduction.

Concerning this plant, Watt (*Commercial Products of India*), under *A. stipulata*, says: "All Indian species afford gum, more or less copiously, from wounds on the stem, and though little is known for certain of the specific differences of these gums, that of *A. stipulata* is reputed to be especially valued as a size in the manufacture of Nepal paper. The bark is said to be a fish poison; the leaves of most species are regarded as useful fodders, and in some instances the trees are specially grown on that account, but, according to Mr. Hartless, the stipules and young leaves of this species are poisonous to cattle. The timber is very soft. By far the greatest interest in the species of Albizzia centers in this species, which is now very extensively grown as a shade tree for tea both in Assam and Darjiling. It is known as the *sau* in the former Province and the *kala-siris* in the latter. Its chief value turns on the nitrating warts formed on its roots."

38736. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ. **Bamboo.**

"A common bamboo in the eastern Himalayas from Kumaon to Assam. It is generally a tall grass, 40 to 60 feet in height, but sometimes found as a long and tangled bush. The young shoots are used as food, being boiled and eaten in Sikkim, Bhutan, and Assam. The halms are large, 3 to 6 inches in diameter, rather hollow, and not always straight, but they are used for every variety of purpose. The bamboo grows gregariously on hillsides up to 3,000 feet. This bamboo is used by some tea planters for shading their estates from the hot and violent winds. This bamboo flowers every year, which is not the case with all others of this genus." (*Watt, Dictionary of the Economic Products of India, vol. 3, p. 71.*)

38737. NYSSA SESSILIFLORA Hook. f. and Thoms. Cornaceæ.

"This is a large tree found in the forests of the Sikkim Himalayas above 5,000 feet; also in Martaban between 4,000 and 6,000. The wood is gray, soft, and even grained, and is used for house building and other purposes about Darjiling." (*Watt, Dictionary of the Economic Products of India, vol. 5, p. 438.*)

38738. QUERCUS sp. Fagaceæ. **Oak.**

38733 to 38741—Continued.

38739. TRACHYCARPUS MARTIANA (Wall.) Wendl. Phœnicaceæ. **Palm.**

"This species is found growing in the temperate Himalayas at altitudes of 6,000 to 8,000 feet, and from Nepal eastward to the Khasia Hills at altitudes of 4,000 to 5,000 feet. It is also found growing at Burma at altitudes between 6,000 and 6,500 feet. The trunk is 20 to 50 feet long and slender, clothed beneath the crown with persistent leaf sheaths. The younger parts are softly furfuraceously hairy. The leaves are 4 to 5 feet in diameter, subglaucous beneath, cut about half way down into linear two-lobed segments. The flowers are yellow, ovaries villous. Drupe 1 to 3½ inches long, dirty blue in color." (*Hooker, Flora of British India, vol. 6, p. 436.*)

38740. TERMINALIA TOMENTOSA (Roxb.) Wight and Arn. Combretaceæ.

38741. (No. 17.) (Undetermined.)

38742 to 38751. PANAX QUINQUEFOLIUM L. Araliaceæ. **Ginseng.**

(*Aralia quinquefolia* Decne. and Planch.)

From China. Presented by His Excellency Tsao Julin, twice Minister for Foreign Affairs, through Dr. Paul S. Reinsch, American minister, Peking, China; at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture.

See S. P. I. Nos. 37870 and 37871 for other varieties and for description.

Quoted notes by Tsao Julin.

38742. "Seeds of the wild ginseng from Linkianghsien."

38743. "Seeds of the wild ginseng from Kwantien. Located in Funghuang Subprefecture, Shengking Province. Latitude 40° 42′ N. and longitude 124° 49′ E."

38744. "Seeds of the cultivated ginseng from Kwantien."

38745. "Seeds of cultivated ginseng from Fushun. Located northeast of Mukden. Latitude 41° 53′ N. and longitude 123° 51′ E."

38746. "Seeds of cultivated ginseng from Chianhsien, located in Shengking Province, Manchuria, in Hsingking Subprefecture."

38747. "Seeds of cultivated ginseng."

38748. "Seeds of cultivated ginseng from Antuhsien."

38749. "Seeds of cultivated ginseng from Linkianghsien."

38750. "Seeds of cultivated ginseng from Tunghwahsien, located in Hsingking Subprefecture, Shengking Province, Manchuria, east of Mukden. Latitude 41° 37′ N. and longitude 128° 7′ E."

38751. "Seeds of cultivated ginseng from Fusung."

38752 to 38755. ORYZA SATIVA L. Poaceæ. **Rice.**

From India. Presented by Mr. H. G. Carter, economic Botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received July 3, 1914. Quoted notes by Mr. Carter.

38752. "(No. 35958, Bengal, India.) *Kalojira.* From the district agricultural officer, Mymensingh, Bengal Province."

38753. "(No. 36241, Bombay, India.) *Dhundhari.* From the district agricultural overseer, Broach, Bombay Province."

38752 to 38755—Continued. (Quoted notes by Mr. H. G. Carter.)

38754. "(No. 36249, Burma, India.) *Nakerijea.* From the deputy commissioner, Akyab, Burma Province."

38755. "(No. 36319, Hyderabad, India.) *Kamod.* From Hyderabad, Hyderabad Province."

38756. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder, through Mr. Chester J. Hunn, assistant horticulturist, Hawaii Experiment Station. Received July 6, 1914.

Kai koi o Ewa.

38757. PSIDIUM CATTLEIANUM Sabine. Myrtaceæ. **Guava.**

From Santa Barbara, Cal. Presented by Mr. G. P. Rixford, San Francisco, Cal. Received at the Plant Introduction Field Station, Chico, Cal.

Var. *lucidum* Hort.

"Seed of a yellow guava, supposed to be a little hardier than the ordinary form." (*R. L. Beagles.*)

38758 and 38759.

From Kew, England. Presented by the director, Royal Botanic Gardens, Kew, England.

38758. ACACIA RETINODES Schlecht. Mimosaceæ. **Wirilda.**

This everflowering acacia is a native of Victoria and South Australia, where it grows along the river banks. It does well in moist places, but never grows beyond the size of a small tree, usually attaining a height of 20 to 25 feet. The wood is prettily grained, tough, and durable; furnishes a good gum arabic. (Adapted from *Maiden, Useful Native Plants of Australia*, and *Mueller, Select Extra-Tropical Plants.*)

38759. ESCALLONIA PTEROCLADON Hooker. Escalloniaceæ.

"A small, decidedly hardy, much-branched shrub, native of western Patagonia, 4 or 5 feet high, with spreading branches. It is a bushy plant with leaves like a small-leaved myrtle and abundant, very pretty, Epacrislike, fragrant flowers, white, tinged with red. The old wood is clothed with loose, cracked papyraceous bark and the branches are straight, rigid, singularly angled, and winged with vertical alæ (wings) which are sinuate and downy or fringed at the edge." (*Curtis's Botanical Magazine, pl. 4827.*)

38760. COTONEASTER FRIGIDA Wall. Malaceæ.

From Los Angeles, Cal. Seed collected by Mr. P. H. Dorsett, of the Bureau of Plant Industry, at Mr. Huntington's place, Los Angeles, Cal., November 11, 1911. Received at the Plant Introduction Field Station, Chico, Cal.

"A large, rounded, deciduous shrub, 15 to 20 feet high, or a small tree; branchlets at first covered with pale down, becoming smooth. Leaves 3 to 5 inches long, 1 to 2 inches wide, narrowly oval or obovate, deep dull green and smooth above, pale and very woolly beneath when young, becoming almost smooth by autumn. Flowers white, one-third of an inch across, produced very numerously in flattish corymbs 2 inches or more across, terminating in short,

38760—Continued.

leafy twigs; flower stalks very woolly. Fruits in large clusters, each fruit about the size of a pea, rich, bright red.

"Native of the Himalayas; introduced in 1824, and perhaps the most striking of all the cotoneasters. The splendid clusters of 'berries' wreathing the branches make some of the most brilliant pictures of autumn and early winter. Near London, owing to the attacks of birds, they disappear usually before Christmas, but in country places are occasionally seen hanging until February. The species is the most robust in the genus, making, if left to itself, a huge bush 20 feet high and as much through, consisting of numerous branching stems; but if kept to one stem when young, and the lower branches removed, it will make a pretty round-headed tree with a well-shaped trunk. There is a fine specimen of this kind in the Victoria Park at Bath whose trunk is 6 feet or so high and 1 foot or more thick. No hardy shrub more beautiful than this thrives in town gardens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409–410.*)

The wood of this small tree is attracting considerable attention in England as a source of wood for the manufacture of heads for golf sticks.

38761. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehder.) Amygdalaceæ. **Sargent's cherry.**

From Jamaica Plain, Mass. Presented by Dr. C. S. Sargent, Arnold Arboretum. Received July 6, 1914.

"This species is considered by Wilson valuable as a stock for the Japanese cherries." (*Sargent.*)

Distribution.—A large tree, often 75 feet high and 3 feet in diameter, found in Chosen (Korea) and the islands of Hokkaido, Hakodate, and Hondo, in Japan.

"A deciduous tree, 40 to 80 feet high, with a trunk sometimes 3 feet in diameter; young shoots smooth. Leaves obovate to oval, drawn out at the apex into a long, slender point, rounded, sometimes slightly heart-shaped at the base, sharply toothed, 2 to 4 inches long, about half as wide, quite smooth on both surfaces, often reddish when young; stalk smooth, one-half to 1 inch long, with a pair of glands near the blade. Bracts red, oblong, one-half inch long, edged with small glandular teeth. Flowers 1¼ to 1½ inches across, of a lovely deep blush color, produced two to six together in short-stalked umbels, each flower with a stalk 1 to 1¼ inches long; petals obovate, notched at the broad apex; calyx tubular, with five ovate, pointed lobes one-fourth inch long, smooth and entire; stamens deep rose. Fruit a small black cherry, one-third inch wide.

"Native of Japan, introduced by Sargent to Kew in 1893. This splendid cherry, probably the finest of the true cherries as a timber tree, is also one of the most beautiful in its blossom. It flowers in April. The seeds germinate freely after lying dormant a year." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, 250–251,* under *P. sargentii.*)

38762. ANNONA MURICATA L. Annonaceæ. **Guanábana.**

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul. Received July 10, 1914.

"*Guanábana,* a fruit growing wild throughout the coastal region of Ecuador, on a very large tree. Evidently it is closely related to the cherimoya." (*Goding.*)

38763. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

From Rangoon, Burma, India. Presented by Rev. William H. S. Hascall. Received July 14, 1914.

See S. P. I. Nos. 24450, 33094, and 38299 for previous introductions and description.

38764. OSMELIA sp. (?) Flacourtiaceæ. **Lubi lubi.**

From Catanduanes, Philippine Islands. Presented by Mr. E. H. Koert, superintendent, Bicol Farm, through Mr. Paul Popenoe, Washington, D. C. Received July 9, 1914.

"Seeds of a plant which possesses high value for food both for man and beast. In its wild state it appears to prefer places rather heavily mulched." (*Koert.*)

38765 to 38776.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received July 2, 1914.

38765. ANDROPOGON ERIANTHOIDES F. Muell. Poaceæ. **Satin-top grass.**
See S. P. I. No. 19254 for previous introduction.

38766. ALLOTEROPSIS ECKLONIANA (Nees) Hitchcock. Poaceæ. **Grass.**
(*Bluffia ecklonіana* Nees.)

Distribution.—A compactly tufted perennial grass growing from 1 to 3 feet tall, found in the Kalahari region and in the vicinity of Durban in South Africa.

38767. ERAGROSTIS CURVULA (Schrad.) Nees. Poaceæ. **Grass.**

See S. P. I. No. 21313 for previous introduction.

Distribution.—A densely tufted perennial grass with open, nodding panicles, growing about 2 feet high in the Kalahari region of South Africa and extending southward to the Cape of Good Hope.

38768. ERAGROSTIS POA Stapf. Poaceæ. **Grass.**

Distribution.—A densely tufted perennial grass about 2 feet high, found in moist places in the Caledon division of the coast region and in Bechuanaland in the Kalahari region of South Africa.

38769. FINGERHUTHIA AFRICANA Lehm. Poaceæ. **Grass.**

Distribution.—A densely tufted grass resembling timothy in habit and appearance, found in Little Namaqualand, in the Kalahari region and in the Transvaal in South Africa.

38770. ISCHAEMUM GLAUCOSTACHYUM Stapf. Poaceæ. **Grass.**

Distribution.—A slender perennial grass growing about 3 feet high, found along the Pinaars River in the Transvaal, South Africa.

38771. PANICUM MAXIMUM Jacq. Poaceæ. **Guinea grass.**

38772. PANICUM NIGROPEDATUM Munro. Poaceæ.

Distribution.—A perennial grass growing 1 to 2½ feet high, found in the Kalahari region of Africa and northward to the upper Zambezi region.

38765 to 38776—Continued.

38773. CHAETOCHLOA AUREA (Hochst.) Hitchc. Poaceæ.
(*Setaria aurea* Hochst.)

Distribution.—A perennial grass growing 6 feet tall, with dense panicles covered with yellowish or bright orange bristles, found in the Kalahari region of South Africa and in tropical Africa and Asia.

38774. CHAETOCHLOA LINDENBERGIANA (Nees) Hitchc. Poaceæ.
(*Setaria lindenbergiana* Stapf.)

See S. P. I. No. 34817 for previous introduction.

38775. CHAETOCHLOA NIGRIROSTRIS (Nees) Skeels. Poaceæ.
(*Setaria nigrirostris* Dur. and Schinz.)

38776. CHAETOCHLOA SULCATA (Aubl.) Hitchc. Poaceæ.
(*Setaria sulcata* Raddi.)

38777. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Lima, Peru. Procured from Señor J. A. MacKnight, director, Escuela Normal de Varenes. Received July 15, 1914.

38778. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Somma Vesuviana. Presented by Dr. Gustav Eisen, Rome, Italy. Cuttings received July 17, 1914.

"*Pelese* apricot. Size, large; slightly ovoid. Deep crease between the cheeks, one of which is larger than the other. Skin smooth, without spots. Color, orange chrome, with carmine flush. Seed medium, with a small projection or knur. Flesh very firm; ripens evenly all around and shows no unripe side. Flavor very fine. Sweetness medium (the specimen having been picked while unripe). Leaves pointed. I consider this apricot one of the finest, if not the finest, I have come across. It should be a splendid shipper, and if the sweetness is increased by allowing the fruit to ripen more, it should prove a very desirable table fruit, superior to the *Royal*. An average fruit displaced 53 c. c. water when immersed in a graduate." (*Eisen.*)

38779. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Presented by Mr. Chester J. Hunn, assistant horticulturist, Hawaii Agricultural Experiment Station. Received July 20, 1914.

"A small, bushy tree, with handsome dense foliage, native of China. It blossoms in the dry season (about February), producing sprays of pale-green flowers, and ripens its fruit about June. The fruit, produced in clusters, is of the size and form of a large plum, with a rough, thin, scalelike rind, which becomes of a beautiful red tinge, gradually turning to a dark-brown color before it is quite ripe. The jellylike pulp or aril which covers the seed is of a translucent whiteness and of an agreeable refreshing flavor. This fruit, represented by different varieties of varying quality, is grown to great perfection about Calcutta and elsewhere in India and is commonly sold in the bazaars when in season. Cameron says it thrives up to 3,500 feet in South India, giving at Bangalore two crops of fruit a year (in May and December). It is grown successfully in Mauritius, but curiously enough it is rarely met with in Ceylon,

38779—Continued.

though introduced here as early as 1802. The tree flourishes and produces fruit at Peradeniya, but the variety here grown is obviously an indifferent one. There are several varieties in cultivation, distinguished by size and shape of fruit, quality of pulp, and size of seed. Litchi fruits are dried and preserved in China and Cochin China, whence they are exported to Europe and America. Dried litchis are not unlike raisins, both in appearance and taste. The tree may be increased by seed, but budding or grafting should be adopted to propagate the best varieties." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

For an illustration of the litchi tree as grown in California, see Plate I.

38780. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Amoy, China. Presented by Mr. Lester Maynard, American consul. Received July 16, 1914.

38781 to 38844.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 10, 1914. Quoted notes by Mr. Meyer.

38781. OPHIOPOGON JAPONICUS (L. f.) Ker-Gawler. Liliaceæ.

"(No. 2112a. Tahuashan, Shensi, China. December 29, 1913.) A liliaceous herbaceous perennial, found in shady nooks on rocky places. Of value possibly in the hardy border in shady places."

38782. BRASSICA PEKINENSIS (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

"(No. 2052a. Tsaochowfu, Shantung, China. March 11, 1914.) A remarkably fine variety of winter pe-tsai, of very white color and possessing a mild, sweet flavor. Weighs up to 10 pounds apiece. Chinese name *Ta pai ts'ai*, meaning 'large white vegetable.' See former notes [S. P. I. No. 36113] as to cultivation."

38783. BRASSICA NAPIFORMIS (Paill. and Bois) Bailey. Brassicaceæ. **Turnip-rooted Chinese cabbage.**

"(No. 2053a. Village of Tachungko, near Taianfu, Shantung, China. March 21, 1914.)"

38784 and 38785. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

38784. "(No. 2054a. Sianfu, Shensi, China. January 30, 1914.) A Chinese winter radish of a beautiful bright red color; shape round and flattened; size medium large. A very attractive-looking winter vegetable. Chinese name *T'ieh hung tan lo po*, meaning 'iron-red ball root.'"

38785. "(No. 2055a. Sianfu, Shensi, China. January 30, 1914.) A variety of Chinese early summer radish of bright red color and of elongated shape. Can be eaten fresh or stewed. Chinese name *Yeh chi hung shui lo po*, meaning 'wild-pheasant red-winter root.'"

38786. DAUCUS CAROTA L. Apiaceæ. **Carrot.**

"(No. 2056a. Sianfu, Shensi, China. January 30, 1914.) A long, blood-red carrot. Of special value for pickling purposes on account of its attractive color. Thrives best on deep, rich, sandy soils which retain moisture well. Chinese name *Hung t'iao lo po*, meaning 'red-stick root.'"

THE FIRST CHINESE LITCHI TREE (LITCHI CHINENSIS SONNERAT) TO FRUIT IN THE UNITED STATES. (SEE S. P. I. No. 38779.)

Although the famous Afong litchi tree has borne more or less regularly in Honolulu for the past twenty years, most of the attempts which have been made to grow this species in California and Florida have failed. This illustration, according to Mr. Hadley, shows a seedling introduced by Reasoner Bros., of Oneco, Fla., now growing on the Hadley place in Santa Barbara, Cal. It was 9 feet high and had a spread of 13½ feet at the time the photograph here reproduced was taken, October 28, 1914. In 1914 it bore and ripened several fruits. In 1915 it bloomed but failed to fruit. It was not injured by the freeze of 1913, although to just how low temperatures it was subjected is not known. A report from India indicates that 21° F. will injure the foliage, whereas a similar report from South China is to the effect that 24° F. injured large trees severely. The freeze of February 3, 1917 (temperature 26° F.), at Miami, Fla., killed 10-year-old trees nearly to the ground. (Photographed by Wilson Popenoe, October 28, 1914; P16216FS.)

AN ORCHARD OF THE LARGE-FRUITED CHINESE HAWTHORN (CRATAEGUS PINNATIFIDA BUNGE) NEAR TAIANFU, SHANTUNG, CHINA. (SEE S. P. I. No. 38796.)

An extensive orchard of large-fruited Chinese hawthorn trees, showing the dense and low branching habit of this tree. There is such a great demand for these fruits that the farmers are steadily increasing their plantings. The hawthorns (or haws) have never been considered by Americans as valuable fruit trees, although there are species which bear distinctly fine flavored fruits. The existence in China of these orchards of a large-fruited grafted variety, as described by Mr. Frank N. Meyer, suggests the possibility of improving our own American hawthorns and selecting and grafting the best flavored, largest fruited seedlings. The jelly made from the fruit of this Chinese species is considered by Americans in China a distinct delicacy. (Photographed by Frank N. Meyer, March 29, 1914; P13074FS.)

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38787. ALLIUM SCHOENOPRASUM L. Liliaceæ. **Chives.**

"(No. 2057a. Sianfu, Shensi, China. January 30, 1914.) A superior variety of chives, much used, forced in darkness as a winter vegetable. Eaten with fried meats and as a savory in soups; considered to be very healthful. Might possibly be a profitable crop in America when supplied to the Hebrew and Chinese colonies in eastern American cities. Chinese name *Chiu ts'ai tzŭ*."

38788. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"(No. 2058a. Feicheng, Shantung, China. March 26, 1914.) A very elongated variety of Chili pepper, locally much dried and kept for winter use. Is used as a condiment in soups and with noodles when ground and mixed with sesame oil and a little salt, creating a good appetite that way. Chinese name *Ch'ang la chiao*, meaning 'long chili pepper.'"

38789 to 38792. ZEA MAYS L. Poaceæ. **Corn.**

From Peking, China. Collected April 28, 1914.

38789. "(No. 2059a.) A variety of flint maize, of golden-yellow color, said to ripen early. Chinese name *Wu yüch hsien yü mi*, meaning 'fifth moon new imperial grain.'"

38790. "(No. 2060a. A rare variety of flint maize of grayish color, said to ripen early. Chinese name *Wu yüch hsien yü mi*, meaning 'gray imperial grain.'"

38791. "(No. 2061a. A rare variety of flint maize of violet-purplish color. Said to have come from Japan. Chinese name *Tzŭ yü mi*, meaning 'violet imperial grain.'"

38792. "(No. 2062a.) Mixed varieties of flint maize said to have come from Japan. Chinese name *Tsa jih pên yü mi*, meaning 'mixed Japanese imperial grain.'"

38793. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"(No. 2063a. Provinces of Honan, Shensi, Shansi, and Shantung, China. December, 1913, to April, 1914.) Collected from fruits of cultivated varieties. To be sown to obtain primarily pollen-bearing trees."

38794. PYRUS CHINENSIS Lindl. Malaceæ. **Pear.**

"(No. 2064a. Provinces of Honan, Shensi, Shansi, and Shantung, China. December, 1913, to April, 1914.) Mixed varieties of Chinese pears obtained from fruits of cultivated varieties. To be sown to obtain new varieties possibly."

38795. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Malaceæ. (*Pyrus cathayensis* Hemsl.) **Quince.**

"(No. 2065a. Sianfu, Shensi, China. January 19, 1914.) Mixed varieties of Chinese quinces. To be sown like S. P. I. No. 38794. See S. P. I. No. 35639 for remarks."

38796. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

"(No. 2066a. Provinces of Honan and Shantung, China. February and March, 1914.) Mixed varieties of Chinese haw fruits. To be sown out for stocks. The seeds may remain dormant for one or two years."

For an illustration of a hawthorn orchard in China, see Plate II.

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38797 and 38798. THUJA ORIENTALIS L. Pinaceæ. **Arbor vitæ.**

From Chaoyi, Shensi, China. Collected February 7, 1914.

38797. "(No. 2067a.) A remarkable form of the oriental arbor vitæ, of flattened globular shape and of very dense growth. A rare tree! Of value for cemeteries and for places of dignity. Specially suited to mild-wintered, semiarid climes."

38798. "(No. 2068a.) A conical form of the oriental arbor vitæ, of somewhat less dense growth than S. P. I. No. 38797. Of like value."

For an illustration of the arbor vitæ as grown in China, see Plate III.

38799. PYRUS sp. Malaceæ. **Pear.**

"(No. 2069a. Kwanyunting, Honan, China. December 20, 1913.) A small species of pear of round-elongated shape with long peduncle. Color russet brown. Becomes soft and mushy when ripe. Chinese name *T'ang li*, meaning 'sugar pear.'"

38800 to 38802. GLEDITSIA SINENSIS Lam. Cæsalpiniaceæ. **Soap bean.**

38800. "(No. 2070a. Sianfu, Shensi, China. January 7, 1914.) A large-podded variety of the Chinese soap bean. These Chinese Gleditsias often grow to very large size, becoming quite old and at times making beautiful, well-rounded heads of dense branches and foliage. The conspicuous pods persist on the trees all through the winter. These trees are marvelously drought resistant and do not object to a certain amount of alkali. Recommended as an ornamental park and shade tree for the mild-wintered, semiarid sections of the United States. The Chinese find use for the pods, when sliced up, as a substitute for soap for washing their hair and certain fabrics. They call them *Tsao chio*, meaning 'black horns.' To insure a quick germination, scratch the seed or immerse for a second or so in boiling water."

For an illustration of the soap-bean tree in China, see Plate IV.

38801. "(No. 2071a. Lingpao, Honan, China. December 24, 1914.) The ordinary Chinese soap bean, as seen everywhere along the roads in Honan and Shensi. The young trees often have their trunks covered with big spines, which often have totally disappeared, however, when the trees are old. For further remarks, see S. P. I. No. 38800."

38802. "(No. 2072a. Puchowfu, Shensi, China. February 9, 1914.) A rare variety of Chinese soap bean, having long, slender pods of cylindrical shape. For further remarks see S. P. I. No. 38801. Chinese name *Hsiang ya tsao chio* meaning 'elephant's trunk soap bean.'"

38803. JUNIPERUS CHINENSIS L. Pinaceæ. **Juniper.**

"(No. 2075a. Village of Nantotchu, Shensi, China. January 10, 1914.) A vigorous-growing form of the North Chinese juniper recommended like S. P. I. No. 38804. Chinese name *Hsüeh po*, meaning 'red conifer.'"

38804. JUNIPERUS CHINENSIS L. Pinaceæ. **Juniper.**

"(No. 2074a. Sianfu, Shensi, China. January 25, 1914.) A juniper of tall, but graceful growth, apparently a form of *Juniperus chinensis*. Able

ARBOR VITÆ (THUJA ORIENTALIS L.) IN SHENSI, CHINA. (SEE S. P. I. No. 38798.)

A single specimen of conical form, called by the Chinese *Weng pai shu*, meaning "water-jar conifer," referring to its outlines, which seem to resemble certain types of water jars. Of value as an evergreen for cemeteries and for places of dignity. Especially suited to mild-wintered semiarid climes. (Photographed by Frank N. Meyer, August 15, 1914, near Chaoyi, Shensi, China; P13157FS.)

AN OLD SOAP-BEAN TREE (GLEDITSIA SINENSIS LAM.) NEAR TIENTANGYI, SHENSI, CHINA. (SEE S. P. I. No. 38800.)

A large old tree found in a dry place. The dense head of branches is characteristic of this species of honey locust as seen on the Sianfu plain. It is a long-lived beautiful shade tree with long stout spines and well-rounded head of dense branches and foliage. It is remarkably resistant to drought and a valuable ornamental park and shade tree for the semiarid sections of the United States. The large thick pods, which contain considerable quantities of saponin, are sliced and used as a substitute for soap. No. 38800 is a large-podded variety of this interesting tree. (Photographed by Frank N. Meyer, January 23, 1915; P12160FS.)

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

to withstand considerable drought and alkali, and recommended as a very ornamental evergreen for parks and gardens in the mild-wintered, semiarid sections of the United States."

38805. TOONA SINENSIS (Juss.) Roemer. Meliaceæ.
(*Cedrela sinensis* Juss.)

From Changli, Chihli, China. Secured by Mr. Frank N. Meyer, from Mrs. Mary Clemens. Collected November 1, 1913.

"(No. 2076a.) The well-known Chinese cigar-box wood, of which the Chinese eat the young sprouts like spinach. The trees become quite old, grow to large size, and withstand drought and alkali to a considerable extent. Recommended as a shade and avenue tree for the mild-wintered sections of the semiarid belt in the United States. Chinese name *Hsiang ch'un shu*, meaning 'sweet chun tree.' Obtained from Mrs. Mary Clemens at Tientsin, who collected these seeds at Changli."

38806. PAULOWNIA FORTUNEI (Seem.) Hemsley (?). Scrophulariaceæ.

"(No. 2077a. Village of Nantotchu, south of Sianfu, Shensi, China. January 21, 1914.) A Paulownia growing into a medium-sized tree, able to withstand drought and a certain amount of alkali. For further information, see S. P. I. No. 38184."

38807. LIGUSTRUM QUIHOUI Carr. Oleaceæ. **Privet.**

"(No. 2078a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A privet found in rocky banks and in between pebbles and rocks, growing into a small or medium-sized bush. Bears masses of small black berries, that set off well the small evergreen foliage. Is much utilized by the Chinese upon which to graft *Olea fragrans*. Of value as a hedge and border shrub, especially for the mild-wintered, semiarid parts of the United States. Chinese name *Tung ch'ing chih*, meaning 'wintergreen.'"

38808 and 38809. LESPEDEZA sp. Fabaceæ.

From Tahuashan, Shensi, China. Collected December 29, 1913.

38808. "(No. 2079a.) A shrubby Lespedeza, growing 3 to 4 feet in height, found on rocky mountain slopes at altitudes of 3,000 to 4,000 feet. Of value possibly for forage purposes and as a cover shrub on sandy wastes."

38809. "(No. 2080a.) A small, shrubby Lespedeza, found on rocky mountain sides at about 3,000 feet elevation. Of value possibly for forage purposes and as a cover shrub on sandy wastes."

38810. TILIA MONGOLICA Maxim. Tiliaceæ. **Linden.**

"(No. 2081a. Tahuashan, Shensi, China, December 29, 1913.) A small-leaved linden occurring on rocky mountain sides. In the higher altitudes and in the more exposed places it remains a shrub, but when found in sheltered localities grows to be a tall tree. Of value possibly as a hardy shade and park tree for northern localities. Collected at 5,000 feet altitude. Chinese name *Mi tuan shu*."

38811. BERBERIS sp. Berberidaceæ. **Barberry.**

"(No. 2084a. Tahuashan, Shensi, China. December 29, 1913.) A barberry of medium tall growth, found on stony mountain slopes. Bears very large red fruits, which may prove to be of value for preserving purposes. Collected at an altitude of about 6,000 feet."

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38812. HYDRANGEA BRETSCHNEIDERI Dippel. Hydrangeaceæ.

Hydrangea.

"(No. 2085a. Tahuashan, Shensi, China. December 29, 1913.) A vigorously growing Hydrangea, mostly found between bowlders or rocks on somewhat moist soils. Of value possibly as an ornamental park shrub for northern regions."

38813. VIBURNUM sp. Caprifoliaceæ.

"(No. 2086a. Tahuashan, Shensi, China. December 29, 1913.) A Viburnum, found as undergrowth between tall, open trees. In habit resembling *Viburnum opulus* but of looser growth and thinner branches. Of value possibly as an ornamental park shrub for northern regions."

38814. LONICERA PERICLYMENUM L. Caprifoliaceæ. **Honeysuckle.**

"(No. 2087a. Tahuashan, Shensi, China. December 29, 1913.) A twining honeysuckle found between scrub in shady places. The flowers are borne in terminal bunches and are surrounded by a typical large circular involucrum. Of value as a porch or pillar vine in gardens and parks."

38815 and 38816. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

From the mountains near Nantotchu, Shensi, China. Collected January 21, 1914.

38815. "(No. 2088a.) An evergreen, trailing honeysuckle bearing black berries, found on well-sheltered, rocky banks. Of value for covering waste places."

38816. "(No. 2089a.) A bush honeysuckle. See S. P. I. No. 37545 for previous introduction."

38817. EXOCHORDA RACEMOSA (Lindl.) Rehder. Rosaceæ.
(*Exochorda grandiflora* Lindl.)

"(No. 2090a. Tahuashan, Shensi, China. December 29, 1913.) A medium tall, sturdy shrub, found here and there in great masses in rocky crevices at altitudes between 3,000 and 5,000 feet. Of value as an ornamental garden shrub, especially for rockeries, and for semi-arid regions."

38818. CLEMATIS sp. Ranunculaceæ. **Clematis.**

"(No. 2091a. Tahuashan, Shensi, China. December 29, 1913.) A climbing clematis found in between shrubbery and running over same. Bears apparently large flowers; possesses somewhat glossy foliage. Collected at an altitude of 4,500 feet."

38819. ELSHOLTZIA STAUNTONI Benth. Menthaceæ.

"(No. 2092a. Tahuashan, Shensi, China. December 28. 1913.) A woody labiate, growing from 1½ to 2 feet in height, found amidst stony débris at altitudes between 2,000 and 3,000 feet. Of value possibly as a rockery shrub and along open borders."

38820. ALBIZZIA sp. Mimosaceæ.

"(No. 2093a. Near Taianfu, Shantung, China. March 22, 1914.) A silk-flower tree having whitish blossoms and large doubly pinnate leaves. Found on rocky, sterile, mountain slopes. Of value as a soil binder in dry regions. For further information see S. P. I. No. 38285."

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38821. Rosa sp. **Rose.**

"(No. 2094a. Tahuashan, Shensi, China. December 29, 1913.) A shrubby rose, of which the young twigs are reddish colored and bear very broad, reddish spines, like *Rosa hugonis*. The old fruits are black. Collected on stony places at an altitude of about 5,000 feet."

38822. Celtis sinensis Pers. Ulmaceæ. **Hackberry.**

"(No. 2095a. Near Mienchih, Honan, China. February 20, 1914.) A hackberry, growing into a medium-sized tree, producing a dense head of branches. Found in rocky cliffs. Of value as a shade tree for semi-arid climes."

38823. Rosa multiflora cathayensis Rehd. and Wils. Rosaceæ. **Rose.**

"(No. 2096a. Tahuashan, Shensi, China. December 29, 1913.) A semievergreen, trailing rose, found on rocky places and among low scrub. Leaves dark, glossy green; apparently very floriferous. Of value possibly in breeding experiments."

38824. Caragana sp. Fabaceæ.

"(No. 2097a. Tahuashan, Shensi, China. December 29, 1913.) A peculiar species of Caragana of very erect growth, found on semishady rocky mountain slopes, at altitudes of over 5,000 feet. Of value as a garden and park shrub for northern regions."

38825. Zanthoxylum alatum Roxb. Rutaceæ.

"(No. 2098a. Mountains near Nantotchu, south of Sianfu, Shensi, China. January 21, 1914.) A Chinese pepper bush having semipersistent pinnate leaves, of which the midribs are winged. Of loose and open growth and having long, overhanging branches. Found beneath the shelter of various trees. Of value possibly as an ornamental park shrub for the mild-wintered regions of the United States."

38826. Jasminum sp. Oleaceæ. **Jasmine.**

"(No. 2099a. Near Nantotchu, Shensi, China. January 21, 1914.) A jasmine, growing to 1 to 3 feet in height, having erect, bright-green branches and bearing black berries. Found on dry and sterile mountain slopes, between scrub. Of value possibly as a rockery shrub and along borders and pathways in gardens and parks."

38827. Smilax vaginata Decaisne. Smilacaceæ.

"(No. 2100a. Tahuashan, Shensi, China. December 29, 1913.) A peculiar liliaceous shrub having strong, but brittle, erect branches of green color, growing to 3 to 5 feet in height. Bears small clusters of blue-black berries. Found on shaded mountain slopes and as undergrowth beneath trees. Deciduous. Of value as a ground cover beneath tree growth for southern parks."

38828. Syringa amurensis Rupr. (?) Oleaceæ. **Lilac.**

"(No. 2101a. Tahuashan, Shensi, China. December 29, 1913.) A tree lilac, found in great masses here and there on rocky mountain slopes, at altitudes between 3,000 and 5,000 feet. Of value as a stock for standard lilacs and for hybridization purposes."

38829. Syringa sp. Oleaceæ. **Lilac.**

"(No. 2102a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A lilac of small and slender growth found on a stony mountain slope. See S. P. I. No. 37544 for prevous introduction."

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38830. SYRINGA VILLOSA Vahl. **Lilac.**

"(No. 2103a. Tahuashan, Shensi, China. December 29, 1913.) A small lilac of very sturdy growth, found in rocky cliffs at altitudes of 4,000 to 6,000 feet. Of value as a garden and park shrub for the northern sections of the United States."

38831. THUJA ORIENTALIS L. Pinaceæ. **Arbor vitæ.**

"(No. 2104a. Mountain near Nantotchu, Shensi, China. January 21, 1914.) The ordinary oriental arbor vitæ, collected from specimens found growing on exposed rocky places. For trial in sections north of the present limits of this tree. Also to be tested in very dry localities. Chinese name *Mien po*, meaning 'soft conifer.'"

38832. KOLKWITZIA AMABILIS Graebner. Caprifoliaceæ.

"(No. 2105a. Tahuashan, Shensi, China. December 29, 1913.) A shrub, growing from 4 to 6 feet in height, found on rocky places, bearing small, spiny fruits. See S. P. I. No. 37480 for previous introduction."

38833 to 38835. EUONYMUS spp. Celastraceæ.

From Tahuashan, Shensi, China. Collected December 29, 1913.

38833. "(No. 2106a.) A shrubby cardinal's-cap having long, thin branches, bearing small fruits, hanging down on long peduncles. Found in between bowlders and rocks."

38834. "(No. 2107a.) A shrubby cardinal's-cap of more robust growth than S. P. I. No. 38833, also having larger fruits. Found as undergrowth beneath tall trees on rocky places."

38835. "(No. 2108a.) A cardinal's-cap having large, fleshy fruits; grows into a medium-sized shrub; found on somewhat shady places."

38836. CELASTRUS ANGULATUS Maxim. Celastraceæ. **Bittersweet.**

"(No. 2109a. Tahuashan, Shensi, China. December 30, 1913.) A species of bittersweet of semitrailing, shrubby growth, found on partly shaded places in between scrub. Quite ornamental when covered with its masses of yellow capsules, out of which peep the scarlet-orange coated seeds."

38837. PAEDERIA FOETIDA L. Rubiaceæ.

"(No. 2110a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A slender, semiwoody climber, found on rocky mountain slopes in between tall scrub; bears bunches of yellowish berries."

38838. COCCULUS sp. Menispermaceæ.

"(No. 2111a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) A trailing herbaceous vine, bearing bluish berries; found on open stony places."

38839. OPHIOPOGON JAPONICUS (L. f.) Ker-Gawler. Liliaceæ.

"(No. 2113a. Mountains near Nantotchu, Shensi, China. January 21, 1914.) An Ophiopogon, with long, slender leaves, remaining green all winter. Bears long spikes of black berries. Found on mountain slopes of decomposed rock between low scrub. Of value as an edging plant along pathways and as a ground cover in shady places for the mild-wintered sections of the United States."

38781 to 38844—Continued. (Quoted notes by Mr. F. N. Meyer.)

38840. ASPARAGUS sp. Convallariaceæ. **Asparagus.**

"(No. 2114a. Chaoyi, Shensi, China. February 7, 1914.) A rare species of asparagus of somewhat trailing or twining growth; found in a sandy loess bank."

38841. ANEMONE sp. Ranunculaceæ. **Anemone.**

" (No. 2115a. Tahuashan, Shensi, China. December 29, 1913.) A tall-growing anemone, found amidst bowlders and rocks on somewhat sheltered places at altitudes between 2,000 and 4,000 feet. Apparently ornamental."

38842. TRICHOSANTHES KIRILOWII Maxim. Cucurbitaceæ. **Gourd.**

"(No. 2116a. Maochinchen, Shensi, China. February 17, 1914.) A gourd, grown as an ornamental, also used as a medicinal simple, called *Kua lü*. See S. P. I. Nos. 36118 and 38489 for previous introductions."

38843. ACER sp. Aceraceæ. **Maple.**

" (No. 2082a. Tahuashan, Shensi, China. December 29, 1913.) A maple, growing to be a medium-sized tree, having a scaly, somewhat rosy colored bark. Leaves small, trifoliate and hirsute; coloring up in fall to a rosy wine red. Wood very hard and used for posts and pillars. Collected at about 5,000 feet elevation. The seeds may remain dormant for a long time."

38844. CRATAEGUS sp. Malaceæ. **Hawthorn.**

" (No. 2083a. Tahuashan, Shensi, China. December 29, 1913.) A shrubby hawthorn, found on rocky mountain slopes. Collected at an altitude of over 5,000 feet. Of value possibly as a park shrub in northern climes."

38845 and 38846. ORYZA SATIVA L. Poaceæ. **Rice.**

From Valencia, Spain. Presented by Mr. Eduardo E. Monteraso, Estacion Arrocera de Sueca. Received July 20, 1914.

38845. *Amonquili.*

38846. "*Benlloch.* This variety is cultivated in this region at the present time, although three years ago *Amonquili*, now no longer cultivated, was the variety raised." (*Monteraso.*)

38847 to 38849. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Honolulu, Hawaii. Presented by Mr. E. V. Wilcox, Hawaii Experiment Station. Received July 16, 1914.

38847. *Aweoweo taro.* Furnished by Mr. V. S. Holt, Waianae.

38848. *Keokeo.* Secured from the Waterhouse Co., Honolulu.

38849. *Ulaula.* Secured from the Waterhouse Co., Honolulu.

38850 and 38851.

From Buenos Aires, Argentina. Presented by the director general, Botanic Garden. Received July 10, 1914.

38850. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook. Papayaceæ.

See S. P. I. Nos. 3534 and 30586 for previous introductions and description.

38850 and 38851—Continued.

38851. GLEDITSIA AMORPHOIDES (Griseb.) Taub. Cæsalpiniaceæ.
(*Garugandra amorphoides* Griseb.)

See S. P. I. Nos. 8934 and 33965 for previous introductions and description.

38852. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Ekatarinodar, Kuban Government, Russia. Secured by Mr. E. Brown, of the Bureau of Plant Industry, from Mr. A. N. Rockel. Received July 3, 1914.

"This is the best alfalfa region in southern Russia, where it has been cultivated for 30 years. Seed is said to have been first brought from Turkestan. In the southern part of the district where the soil is deepest, alfalfa lasts 10 to 12 years. In the northern part the soil is shallower, and alfalfa does not usually last over 4 or 5 years." (*Brown.*)

38853. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ. **Grape.**
(*Vitis caribaea* DC.)

From Herradura, Pinar del Rio, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 23, 1914.

"(No. 1, July 17, 1914.) A vigorous, rapid-growing vine, occurring in the mountains of this Province. These cuttings were obtained from a plant growing in the garden of Prof. F. S. Earle, who considers the species to be of great interest and value for use in developing a race of grapes which can be successfully grown in strictly tropical regions, and he recommends that careful attention be devoted to the hybridization of this species with some of the northern cultivated grapes. In Prof. Earle's garden the vine has completely covered a cashew tree 20 or 25 feet in height and produces fruit very similar in appearance to the wild grape of the North. The bunches are 3 to 5 inches in length, loose, the berries deep purple in color, and about three-eighths of an inch in diameter. They are used here for making jelly and grape juice." (*Popenoe.*)

38854. OCHROMA LAGOPUS Swartz. Bombacaceæ.

From Ceylon. Presented by Mr. J. T. Crawley, director, Estacion Experimental Agronómica, Santiago de las Vegas, Cuba. Received July 17, 1914.

"A very valuable plant of large growth; the wool produced by the fruit is textile, and the wood of the trunk is very light. It is employed in Cuba among other purposes for sustaining on the water the nets used for fishing, instead of cork." (*Crawley.*)

38855 and 38856.

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 24, 1914. Quoted notes by Mr. Meyer.

38855. SAXIFRAGA sp. Saxifragaceæ. **Saxifraga.**

"(No. 1220. June 14, 1914.) A wild plant, offered for sale in the streets of Peking. Said to be ornamental, having rose-colored flowers. Loves somewhat moist, shady situations. Chinese name *Ssŭ chi hai t'ang*, meaning 'four-season begonia.'"

38855 and 38856—Continued. (Quoted note by Mr. F. N. Meyer.)

38856. PRUNUS TOMENTOSA Thunb. Amygdalaceæ. **Cherry.**

"(No. 2117a. June, 1914.) Stones of the North China bush cherry, a fruiting shrub of great promise for the cooler, semiarid sections of the United States. Chinese name *Suan t'ao* or *Suan ying t'ao*, meaning 'sour cherry.'"

38857 and 38858.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received July 23, 1914. Quoted notes by Mr. Mead.

38857. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. **Cassava.**
(*Manihot utilissima* Pohl.)

"*Yeruti* (shorter and smaller canes). In June, 1913, I started a Paraguayan on a small chacra belonging to myself, situated at Caballero, about 50 miles south of Asuncion. That month he planted 3 hectares of maize. At the last cultivation of said crop, about October 20, he planted, as is customary here, mandioca or cassava, as you call it, between rows. I have just returned from a two-weeks' trip to this same place, and on June 1 I dug up 100 plants, weighing the tubers. From these weights, as an average of the whole, the crop was 38,500 kilos per hectare. All of this mandioca will not be used this year, and all that is left in the ground until next year will produce nearly double the weight. According to my figures, that date is 7 months 11 days from time of planting, but they have been digging and using the same mandioca since the middle of April. The varieties planted are called in Guarany *Mandio Yeruti* and *Mandio Concepcion*, both of them sweet varieties, and differing, in that the *Concepcion* resists drought better. I can not give you any statistics as to chemical properties, but I have seen the practical results of feeding, it being the staff of life here for the family and for farm animals. The starch content is very high also, great quantities being used for making almidon or mandioca flour or starch. The plants need a sandy and very loose soil, but not too rich, or they will all run to stalk."

38858. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. **Yerba maté.**

"The yerba industry is one of the most prosperous in all this district, and it is getting better every day."

38859. ACHRAS ZAPOTA L. Sapotaceæ. **Sapodilla.**
(*Achras sapota* L.)

From Port of Spain, Trinidad, British West Indies. Presented by Dr. J. I. Senior, through Mr. A. J. McConnico, American consul. Received July 23, 1914.

"Some time before I left Trinidad I came across a sapodilla tree which has enormous fruits, quite the largest I have ever seen. As none were ripe, I had no opportunity of testing the quality." (*Frank Evans.*)

"It may not be out of the way to mention that I imported this plant from Curacao, Dutch West Indies, where the sapodilla grows to perfection in all the different and best varieties; among many that I imported only two of them produce such very large fruits." (*Senior.*)

38860. FERONIELLA LUCIDA (Scheff.) Swingle. Rutaceæ.
(*Feronia lucida* Scheff.)

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received July 24, 1914.

For description, see W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture.

38861. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. **Cassava.**
(*Manihot utilissima* Pohl.)

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received July 23, 1914.

"*Concepcion* (long thick canes)."

For description, see S. P. I. No. 38857.

38862. HYMENAEA COURBARIL L. Cæsalpiniaceæ. **Guapinol.**

From San Jose, Costa Rica. Presented by the Department of Agriculture. Received July 16, 1914.

See S. P. I. No. 38565 for previous introduction.

"One of the most beautiful trees of the *tierra caliente* of the Pacific coast, with low trunk and flattened forking, and with leaves composed of two leaflets and imitating a deer's skull. Its fruits are short, thick pods, chocolate color, enclosing variegated seeds surrounded by a dry white powder, used as food by the Indians. The wood is hard and used in the construction of various articles as, for example, mills for grinding cane." (*Pittier, Plantes Usuales de Costa Rica.*)

38863. STIZOLOBIUM sp. Fabaceæ.

From Schoeneberg, Berlin, Germany. Presented by Prof. Dr. G. Schweinfurth. Received July 16, 1914.

"Probably from Tabora, German East Africa, but there is no definite information on this point. This Stizolobium has short, gray, appressed pubescence on the pods, and the seeds are pale gray, thickly spotted, and clouded with brown. Both the pods and the seeds resemble very closely some of the hybrids obtained between the Lyon bean and the Florida velvet bean. This suggests that the present Stizolobium may likewise be a hybrid." (*C. V. Piper.*)

38864 and 38865. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From General Roco, Rio Negro, Argentina. Presented by Mr. Walter Fischer, director, Experiment Station, General Roco. Received July 24, 1914.

"It is customary in this valley, where everything is grown under irrigation and where four cuttings of alfalfa are made per season, to save the second cutting for the seed crop when seed is desired. The object of this is to get a crop more free of weeds than the first cutting would be, and in which there is very often quite a large amount of *trebol de olor* (*Melilotus parviflora*, I believe). As a rule, however, there are very few weeds in any of the alfalfa fields here. These seeds are as they came from the machine, with only the coarse chaff removed." (*Fischer.*)

38864. No. 1. From the first cutting.

38865. No. 2. From the second cutting.

38866. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchc.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received July 24, 1914.

"The seed of this plant matures very irregularly, and I fear much of this seed was unavoidably collected immature. Out here it seems to thrive best in moist clayey loam soils (riversides), but it is apt to become infested with the maize stalk borer." (*Evans.*)

38867. ORYZA SATIVA L. Poaceæ. **Rice.**

From Saloniki, Greece. Presented by Mr. G. Bie Ravndal, American consul general, Constantinople. Received July 16, 1914.

"*Saloniki.* European Turkey grows very little rice; since Macedonia has been taken from the empire by the allied Balkan States, practically none at all. Though all Constantinople was carefully searched for it, not a sample of any sort of rice grown in Turkey in Europe could be obtained here. Inquiries made of the British consul at Adrianople, charged with American interests, produced no better result, and only from the American consul at Saloniki could any information and a sample be secured at all. According to his reply to my request, rice is grown in the region of Vodena, territory now belonging to Greece, near Saloniki, the annual production of which is estimated at from 30 to 40 tons. Almost the entire yield is consumed in Vodena. Some 900 to 1,000 tons are grown in the region of Strumnitza and from 500 to 600 tons in Ichtib, formerly forming a part of European Turkey and now under the sovereignty of Bulgaria and Serbia, respectively. The crop grown at Ichtib is considered of best quality. The soil of Vodena is ordinary earth through which water runs continually. The season of sowing is April; of harvesting, October. The quantity of yield to the dönüm (which is equivalent to 1,600 square piks=856.48 square yards) is from 300 to 800 okes (846.50 to 2,257.50 pounds) of unshelled rice. One hundred okes (282.19 pounds) will give from 50 to 55 okes (141 to 155.20 pounds) of shelled rice. It seems that a record of the cost of production is not obtainable from the growers in these regions. The produce is sold according to the prevailing market prices. From 8 to 10 okes (22.50 to 28.20 pounds) of seed are necessary for one dönüm (856.48 square yards). Owing to the abundance of marshy ground essential for rice cultivation in the region of Vodena, the possibilities for the development of this industry are considerable." (*Ravndal.*)

38868 to 38880. COIX spp. Poaceæ. **Job's-tears.**

From Burma, India. Presented by Mr. H. G. Carter, economic botanist to the Botanical Survey of India, Indian Museum, Calcutta, India. Received July 20, 1914. Quoted notes by Mr. Carter, except as otherwise indicated.

38868 and 38869. COIX LACRYMA-JOBI GIGANTEA (Koenig) Stapf.

38868. "Var. *aquatica.* No. 36288, from the district commissioner, Pegu, Burma."

38869. "Var. *aquatica.* No. 36289, from the district commissioner, Pegu, Burma."

38870. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf.

"No. 36323, from the superintendent and political officer, Southern Shan States, Taungyi, Burma."

38868 to 38880—Continued. (Quoted notes by Mr. H. G. Carter.)

38871 to 38874. COIX LACRYMA-JOBI MA-YUEN (Romanet) Stapf.

"From the superintendent and political officer, Southern Shan States, Taungyi, Burma."

38871. No. 36324.
38872. No. 36325.
38873. No. 36326.
38874. No. 36327.

"The fully cultivated and edible form, *Mayuen*, is grown (so far as India is concerned) in the Central Provinces, Sikkim, the Khasi Hills, Burma, and the Shan States, and outside of India it appears to be cultivated in Tonkin, China, and the Malaya, but apparently nowhere else. In the elongated semipyriform states of cultivated *C. lacryma-jobi* there is a further peculiarity, viz, a portion at the base of the fruit spathe becomes constricted into a well-marked annular disk. The condition with a soft and striated shell and basal annulus appears to constitute the variety known to botanists as *Mayuen*, a name given in honor of the Chinese general who is supposed to have first pointedly directed attention to the plant." (*Watt, Commercial Products of India*, which see for discussion of the plant as a crop.)

38875 to 38880.

"From the superintendent and political officer, Southern Shan States, Taungyi, Burma."

38875. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf.

No. 36328.

"In the variety known as *stenocarpa* the capsular spathe is elongated until it becomes cylindrical, but when cultivated the tubes (so formed) change in color to chalky white or become almost straw colored." (*Watt, Commercial Products of India.*)

38876. COIX LACRYMA-JOBI L.

No. 36329.

38877 to 38879. COIX LACRYMA-JOBI MA-YUEN (Romanet) Stapf.

38877. No. 36331.
38878. No. 36332.
38879. No. 36333.

38880. COIX LACRYMA-JOBI L.

"No. 36339. This shows a transitional form of variety *stenocarpa* passing into variety *monilifer*."

"The flattened spheroidal form, the connecting link between *C. lacryma-jobi* and var. *stenocarpa*, is the special bead form. It is a wild plant met with chiefly in Burma, the Malaya, China, and Japan, and has been named by me var. *monilifer*." (*Watt, Commercial Products of India.*)

38881 and 38882. PASSIFLORA MALIFORMIS L. Passifloraceæ.

Passion fruit.

From Bogota, Colombia. Presented by Mr. T. A. Thomson, American minister, who obtained them from Mr. F. L. Rockwood, clerk of the legation, Bogota. Received July 24, 1914. Quoted notes by Mr. Rockwood.

38881 and 38882—Continued. (Quoted notes by Mr. F. L. Rockwood.)

38881. "No. 1. *Kuruba amarilla*, yellow kuruba, is a prolific bearer and a standard fruit in the market of this capital. The fruits are used in the same manner as strawberries for the table. It is a climbing vine and has an attractive flower."

38882. "No. 2. *Kuruba indio*, Indian kuruba. Its name is taken from the frequency with which it is met around the huts of the Indians in the Andes. A brilliant scarlet flower and green-colored fruit which is liked by the Indians and eaten without any preparation. Seldom, if ever, found in the market. These fruits are mixed with the yellow when procuring them from the mountain by parties sent out for them."

38883 to 38887.

From Esperanza, Sonora, Mexico. Presented by Mr. W. W. Mackie, director, Yaqui Valley Experiment Station. Received July 22, 1914. Quoted notes by Mr. Mackie, except as otherwise indicated.

"Gathered in Merv, Transcaspia, Turkestan, in 1911. These seeds came from selections out of three years of crops, during which time I have had them under observation. The climate for the first part of the year in the Yaqui Valley is very similar to the summer of Turkestan, where I obtained these seeds."

38883. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"The beets produced from these seeds are very vigorous, hardy, and drought resistant. The leaves are large and tender and are much used for greens in Turkestan. The flesh is tender, sweet, and light red in color. The root grows to an immense size and is eaten greedily by stock. For three seasons this beet has regularly produced an abundance of plump seeds of high viability in June from seeds planted in the preceding fall. This seeding of beets the first year from seed sometimes occurs at intervals in individuals when subjected to drought and again irrigated, thus starting a new or second growth, but this Turkestan beet produces seed from every beet regularly in June."

38884. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

"Grown for three years at the experiment station at Merv. When planted in March immense crops were produced in June. With the beginning of the rainy season in July another crop is planted, producing fine crops in December. The soil is a dark-red clay. Other pumpkins do not produce such good crops, nor do they so well withstand the heat and drought. The rind is hard and greenish in color. It is a good keeper, lasting for months in this warm climate."

38885. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

"*White Turkestan* barley gathered in Merv, Transcaspia, Turkestan, in 1911. 'The barley itself is of the 6-rowed *nutans* type and has a marked flesh-colored aleurone layer, such as is characteristic of barleys of Asiatic origin; in fact the flesh-colored appearance is more pronounced than we have ever noticed in any similar barley before. This barley really is strange to us. It is irregular in size and form and has a very low albumen content' (due no doubt to the skinning off of the germ or embryo by too close thrashing). 'The taste and flavor are remarkably agreeable. If any of this barley is malted, we should be pleased to receive a 5-pound

38883 to 38887—Continued. (Quoted notes by Mr. W. W. Mackie.)

sample of the malt, since we are inclined to believe that this barley, under proper conditions as to cultivation and thrashing, would result in good malt. If this barley could possibly be grown on a rich, nitrogenous soil, so that the albumen content could be increased to about 13 per cent, it, in our opinion, would be by far the best barley for malting purposes among the samples sent.' (*Report of Wahl-Henius Institute of Fermentology.*)

"Our field tests show this barley to be very vigorous and hardy, with splendid germination. In height it is about 20 to 30 per cent shorter than the common California 6-rowed barley, but produces thicker and longer heads. It is nearly 3 weeks earlier in maturing. In other words, it is a quicker growing variety. On account of its propensity to rust, I would advise that it be planted inland, away from the influence of the seacoast fogs. It appears to be entirely suited to the arid irrigated regions of the Southwest. All our grains are grown entirely without rain by the aid of irrigation, even to sprouting the seed. The *White Turkestan* yields far better than other varieties tested."

38886 and 38887. HORDEUM VULGARE NIGRUM (Willd.) Beaven. **Barley.**

38886. "*Late Black Turkestan* barley gathered in 1911. This barley was secured by me in Samarkand, Turkestan, where the winters are quite severe, with considerable snow. The thermometer often goes far below zero. Our tests at the experiment station show it to be vigorous and hardy, but three weeks later than all other barleys. It behaves much like winter wheat which lies beneath the covering of snow during the winter. This barley would probably do well in the colder regions of the United States. It yields about the same as common or California barley."

38887. "*Early Black Turkestan* barley. This barley is a selection from the Early White Turkestan, which it resembles in every particular except color."

38888. PERSEA AMERICANA Miller. Lauraceæ.
(*Persea gratissima* Gaertn. f.) **Murrieta avocado.**

From Pasadena, Cal. Presented by Mr. R. J. Mather. Received July 30, 1914.

"The *Murrieta* avocado is the only one of the large-fruited, thick-skinned type that ripens in the fall, as far as the author is aware, and this fact makes it of special importance. Few others are on the market at the same time. It is of the round type and is an ideal shipper. At the present time it is rather difficult to propagate (because the trees are growing in very shallow soil underlain with bedrock, which condition may affect the vigor of the trees and through that the vitality of the buds), but this may be overcome in the future.

"Form, obliquely roundish; length, 3¾, diameter 3½ inches; weight, 16 to 20 ounces; apex slightly depressed; base rounded; cavity furrowed, narrow, very shallow, and abrupt; stem stout, truncate; surface undulating to slightly rough; color, yellowish green with numerous medium, rounded, greenish-yellow dots; skin medium thick, tough, finely granular, separating readily from the flesh; flesh creamy yellow, slightly greenish near the skin; texture fine grained,

38888—Continued.

smooth, buttery; fiber, none; flavor rich, very nutty, and pleasant; quality extra good; seed large, spherical, tight in cavity; seed cavity large; season September and October at Los Angeles, Cal." (*K. A. Ryerson, University of California Journal of Agriculture, No. 4, p. 83, 1913.*)

38889. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

From Esperanza, Sonora, Mexico. Presented by Mr. W. W. Mackie, director, Yaqui Valley Experiment Station. Received July 22, 1914.

"*Turkestan* wheat gathered in 1911. These seeds came from selections out of three years of crops, during which time I have had them under observation. The climate for the first part of the year in the Yaqui Valley is very similar to the summer of Turkestan where I obtained these seeds. This wheat was secured on the irrigated lands of the Merv Oasis in Transcaspia, where it is grown mainly by irrigation. It somewhat resembles *Chul* wheat, which was secured in the Valley of the Syr Darya farther north. In Turkestan it yields well and is very hardy and vigorous in the face of severe dry winds and drought. In the Yaqui Valley, however, it is entirely consumed with rust, as is *Chul* wheat. We lie 30 miles inland from the Gulf of California." (*Mackie.*)

38890 and 38891.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received July 30, 1914.

38890. ARTOCARPUS INTEGRA (Thunb.) L. f. Moraceæ. **Jack fruit.**

See S. P. I. Nos. 6451 and 27170 for previous introductions and description.

"A very large tree, native of South India and Malaya, introduced and cultivated in Ceylon, where it has become seminaturalized. The enormous fruits, a single one of which may weigh over 100 pounds, are borne on the trunk and older branches, sometimes at the base of the trunk or even under ground. It is usually oblong and irregular in shape (sometimes almost round), being always green, with the rind consisting of somewhat hexagonal knobs. This fruit forms a very important article of food with the natives, whilst some Europeans also relish it when cooked in curries. When ripe, the fruit has an overpowering odor, and the stronger the latter the better the quality of the fruit, the former not being disliked by those who relish the latter. With the exception of the rind and core, the whole of the fruit is eaten, the white or cream-colored, soft, flaky pulp being used either raw, or boiled, or fried, and used as vegetable for curries, etc. The large, albuminous, datelike seeds are roasted and esteemed in curries. The timber is excellent for cabinetwork, building, etc., and is much used in Ceylon; lemon yellow at first, it turns with age to a very dark tint like mahogany, to which it is but little inferior. The tree is propagated by seed and is suited to moist or semidry districts up to 2,000 feet elevation." (*Macmillan, Handbook of Tropical Gardening.*)

38891. GUILANDINA BONDUC L. Cæsalpiniaceæ.
(*Caesalpinia bonducella* Fleming.)

See S. P. I. Nos. 33570 and 34671 for previous introductions and description.

38892 to 38968.

From Bahia, Brazil. Collected by Messrs. P. H. Dorsett, A. D. Shamel, and Wilson Popenoe, of the Bureau of Plant Industry. Quoted notes by Messrs. Dorsett, Shamel, and Popenoe, except as otherwise indicated.

38892. ERIOCHLOA SUBGLABRA (Nash) Hitchc. Poaceæ. (*Monachne subglabra* Nash.) **Capim Angolinha.**

"*Capim Angolinha*, or 'small Angola,' as the name signifies. This somewhat resembles the common *Angola* or *Para* grass, but is characterized by finer growth. It is not grown so extensively as *Angola* in the region around Bahia, and little is known concerning its probable value, but it is considered worthy of a trial in this country."

Plants.

38893 to 38907. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

"Obtained from the Centro Agricola, at Bahia, Brazil, through the courtesy of Dr. V. A. Argollo Ferrão."

38893. Cayana seedling No. 1.
38894. Cayana seedling No. 2.
38895. Cayana seedling No. 3.
38896. Cayana seedling No. 4.
38897. Cayana seedling No. 5.
38898. Cayana seedling No. 6.
38899. Cayana seedling No. 7.
38900. Cayana seedling No. 8.
38901. Cayana seedling No. 9.
38902. Cayana seedling No. 10.
38903. Cayana seedling No. 11.
38904. Cayana seedling No. 13.
38905. Cayana seedling No. 14.
38906. Cayana seedling No. 17.
38907. Seedling of *Manteiga*, meaning "butter."

38908. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

"These plants are of the variety commonly cultivated in the vicinity of Bahia, Brazil, where they are known under the name of *Abacaxi*. The pineapples of this region are of such excellent quality that they have become, along with those of Pernambuco, famed throughout Brazil. During our stay in 1913–14 we were impressed by their excellence and thought it desirable to try the variety in North America, to see if it would retain its quality in other regions. By some the superiority of Bahia and Pernambuco pineapples is considered due to the peculiarly favorable conditions of climate and soil rather than to any superiority of the varieties cultivated."

38909 to 38922. Poaceæ. **Bamboo.**

"A collection of bamboos obtained from the Centro Agricola at Bahia, Brazil, through the courtesy of Dr. V. A. Argollo Ferrão. This collection has been assembled by Dr. Argollo from southern Europe as well as local sources."

38909 to 38911. BAMBOS sp.

38909. B. 1.
38910. B. 2.
38911. B. 3.

38912 and 38913. PHYLLOSTACHYS spp.

38912. PHYLLOSTACHYS SULFUREA (Carr.) A. and C. Rivière.

"This has yellow stems scarcely so robust as typical *P. mitis*, but otherwise almost identical." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 151–152.*)

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38913. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau.
(PHYLLOSTACHYS NIGRA Munro.)

"Stems varying from 10 to 20 feet high in different parts of the country and from one-half inch to 1¼ inches in diameter, very hollow; at first green, they become with age quite black, the branchlets usually mottled. Leaves in plumelike masses, usually 2 to 3½ inches long, one-fourth to five-eighths inch wide (sometimes larger), of thin texture, dark green above, rather glaucous beneath, smooth on both surfaces, the margins roughened with minute teeth; secondary veins 3 to 6 each side of the midrib. When quite young there is a slight downiness at the base of the midrib beneath. The leaf sheath is terminated by a few erect bristles.

"Native of China and Japan and one of the most elegant of bamboos; very distinct because of its black stems. It is quite a hardy species when once established, although it grows much larger in hotter climates. It is the oldest of Phyllostachys in English gardens and according to Loudon was 7 feet high in the Horticultural Society's gardens in 1837." (*W. J. Bean, Trees and Shrubs Hardy in the British Islès, vol. 2, p. 152.*)

38914. ARUNDINARIA HINDSII Munro.

Received as *Bambos erecta.*

"The stems tufted, 8 to 10 feet high, round, quite erect, up to 1 inch diameter, dark olive green, at first covered with a waxy bloom; joints often 8 to 10 inches apart; central pipe large. Branches erect, forming dense clusters at each joint. Leaves mostly erect, dark green above, rather glaucous beneath, smooth on the surfaces, but with numerous bristlelike teeth on one margin and a few scattered ones on the other; the longest are 8 to 9 inches long, the broadest three-fourths to 1 inch wide; the average width is from one-fourth to five-eighths inch, tapered at the base, the apex long, tail-like. Secondary veins 4 to 6 each side the midrib.

"Native of Japan, cultivated in England since about 1875. It flowered in 1910 and 1911. It is one of the least elegant of bamboos, similar in foliage to *Arundinaria graminea* but less copiously leafy and with darker leaves. The stems and leaves are also stouter and darker green, the habit is less dense, and the plants do not run so rapidly." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 216.*)

38915. SASA TESSELLATA (Munro) Makino and Shibata.
(BAMBUSA TESSELATA Munro.)

"Stems 2 to 3 feet high, one-eighth to one-sixth inch in diameter, with a very small hollow up the center; the joints 1 to 3 inches apart. Stem sheath persistent, 8 to 10 inches long, clasping not only that part of the stem above the joint from which it springs but also portions of the two or three stem sheaths above it; it is fringed with hairs. Leaves somewhat ribbed, of varying size, the largest 18 inches long and 3 to 4 inches wide in the middle; abruptly tapered at the base, very slenderly pointed, dark green above, glaucous beneath. The larger leaves have 15 to 18 secondary veins at each side of the midrib, which is yellow, and tucked under one side of the midrib, especially toward the base, is a line of pale hairs.

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

"Native of China, cultivated in England since 1845, probably before. It is the most striking of dwarf bamboos, with larger leaves than any other, tall or dwarf, and forms broad, rounded masses, the outer stems of which arch outward to the ground, and out of which spring each summer the spikelike new growths. It has never been known to flower under cultivation. Very hardy. It differs from *A. palmata* in the dwarfer habit but larger leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 219,* under *Arundinaria ragamowski.*)

38916 and 38917. BAMBOS sp.

38916. B. 4. **38917.** B. 5.

38918. BAMBOS AUREA-STRIATA Regel.

38919 and 38920. PHYLLOSTACHYS spp.

38919. PHYLLOSTACHYS AUREA A. and C. Rivière.

"Stems pale yellowish green, 10 to 15 feet high in this country, stiffly erect, growing in tufts and spreading slowly, the joints often 5 or 6 inches apart, except at the base, where they are crowded. Beneath each joint there is a curious swollen band, about one-fourth inch wide, which distinguishes this from all other hardy bamboos. Leaves 2 to 4½ inches long, one-third to seven-eights inch wide, broadly tapered at the base, slenderly pointed, dark green above, glaucous beneath, smooth on both surfaces, minutely toothed on the margins; secondary nerves 4 or 5 each side the midrib; stalk one-sixth inch or less long; the leaf sheath surmounted by two tufts of bristles at the summit.

"Native of Japan, cultivated in Europe since the 'seventies' of last century. It flowered at Bitton with Canon Ellacombe, and with the late Signor Fenzi, at Florence, in 1876. It is a pleasing bamboo if planted in a goodly sized mass, although not so graceful as the majority. It is only likely to be confused with *P. mitis*, which is, however, a taller bamboo without the crowded joints at the base of the stem and without the swollen band beneath the joint, which is so distinctive a character in *P. aurea.* (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 149–150.*)

38920. PHYLLOSTACHYS BAMBUSOIDES MARLIACEA Houzeau.
(*Phyllostachys quilioi marliacea* Bean.)

"Stems 18 to 20 feet high in this country, three-fourths to 1¼ inches thick at the base, deep green. Branches long; stem sheaths pinkish when young, conspicuously mottled with deep purple. Leaves among the largest in the hardy Phyllostachys group, varying from 2½ to 6 inches long, one-half to 1¼ inches wide (occasionally they are even larger), bright green above, glaucous beneath; smooth except for some down at the base of the midrib beneath; one margin toothed; secondary veins 5 to 7 each side of the midrib; leaf sheath with a conspicuous tuft of bristles at the top, one-fourth to one-half inch long.

"Native of Japan, introduced into France by Admiral Du Quilio in 1866. It is one of the finest of the hardy bamboos,

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

very hardy and free growing. *P. viridi-glaucescens* is the only species with which, in the adult stage, it is likely to be confused, and from that species it is distinguished by the mottled leaf sheaths (in *P. viridi-glaucescens* they are simply striated or tinged with purple), by the larger leaves, and longer branches.

"Var. *marliacea* (*P. marliacea* Mitford). Marliac's bamboo. A form distinguished by the curious wrinkling of the stems, especially towards the base. It does not appear to be so vigorous as the species, and behaves more like *P. mitis* in regard to hardiness." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152,* under *P. quilioi.*)

38921. ARUNDINARIA SIMONII VARIEGATA Hooker.

"Stems up to 18 feet high, round, very hollow, from 1 to 1¼ inches in diameter at the base, the outer ones arching outwards. Stem sheaths rather persistent, the largest 8 to 10 inches long, purplish when young, hairy at the margins, very glazed within. Leaves narrow oblong, broadly wedge shaped at the base, with long, tapered points, 3 to 12 inches long, one-third to 1¼ inches wide, vivid green above, glaucous on one side of the midrib beneath, rather greener the other; secondary veins 4 to 7 each side of the midrib.

"Native of China, introduced to France by M. Simon in 1862. A very vigorous bamboo, which spreads rapidly by means of its underground suckers, and, with the exception of *A. fastuosa*, the tallest of our hardy sorts. It bears some resemblance to that species (but differs in the more persistent stem sheaths, in the lack of short, crowded branches at each joint, and in its less tufted habit, as well as in its rampant underground suckers). *A. simonii* flowered all over the country between 1903 and 1905. For many years previous to these dates odd stems had flowered and occasionally borne seed without any damage to the plants, but then came the flowering of the entire plants, none of which ever recovered. In gardens now *A. simonii* is only known by small plants raised from the seed then obtained.

"Var. *variegata* Hooker (*Bambusa albo-striata* Hort.). In this variety some of the leaves are striped with white, the leaves so marked being very small and narrow. The full-sized green leaves do not differ from those of the type. This variety has not yet flowered, except partially, in this country. It is of little value." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 219.*)

38922. BAMBOS sp.

B. 6.

38923 to 38927. MUSA PARADISIACA SAPIENTUM (L.) Kuntze. Musaceæ. Banana.

"Presented by Dr. V. A. Argollo Ferrão.

"A collection of bananas from Bahia, Brazil. This collection comprises the most important varieties cultivated at Bahia."

38923. *Anã* or *d'Agua.*

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38924. "*Maçã* (apple). A dessert banana, one of the most popular of all, and one of the commonest in the markets. Said to do best on sandy soil, the fruits being hard and of poor texture on clayey soil. It fruits in less time than most other varieties."

38925. "*Prata* (silver). A medium-sized banana, white fleshed, and of good quality. One of the favorites among the natives."

38926. "*São Thomáz.* A short, very plump variety, produced in short, compact bunches. It is usually baked or cooked in some form."

38927. "*Maranhão.* This is also known as *Poucos e Boas* (few and good). A long, slender fruit, usually eaten cooked. The bunches are slender and produce fewer fruits than the average."

38928 to 38942. CITRUS spp. Rutaceæ.

Plants.

38928. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

Presented by Dr. V. A. Argollo Ferrão.

"*Laranja selecta de umbigo.*"

38929. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

"This tree was presented by Col. Demetrio Luiz de Souza, of Cruz do Cosme, one of the suburbs of Bahia. Col. Demetrio is one of the most successful propagators of the navel orange, and annually buds considerable numbers. This specimen is a selected bud chosen from his nursery."

38930. CITRUS SINENSIS (L.) Osbeck. **Navel orange.**

"A navel orange tree budded from tree 1–1–3 in the grove of Dr. Fortunato da Silva, at Cabulla, Bahia. The bud was inserted on a 1-year-old budded navel obtained for us by Dr. V. A. Argollo Ferrão. For description of this selection, see S. P. I. No. 37754, under which bud wood from the same tree is listed."

38931. CITRUS LIMETTA Risso. **Sweet lime.**

"A budded tree of the *lima doce*, or sweet lime, from the grove of Dr. Fortunato da Silva, Cabulla, Bahia. The sweet lime is popular among Brazilians; in form it is broader and shorter than a lemon, and the pulp, while very juicy, is almost devoid of acidity. It is eaten out of hand or is used to prepare a refreshing drink. It is hardly likely that it could vie in popularity with either the lime or lemon in the United States."

38932. CITRUS sp. **Lime orange.**

"Budded tree of the *laranja lima*, or lime orange. Bud wood was obtained from the grove of Col. João de Teive e Argollo at Agua Comprida, about 12 miles from Bahia, and the buds inserted on navel-orange stock. This fruit is described under S. P. I. Nos. 37784 to 37786."

38933. CITRUS LIMETTA Risso. **Sweet lime.**

"Budded tree of the sweet lime; buds taken from tree 1–1–7 in the grove of Col. Frederico da Costa, Matatu, near Bahia. See S. P. I. No. 37773 for description."

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38934 to 38937. CITRUS SINENSIS (L.) Osbeck.

Plants.

38934. **Navel orange.**

"A young budded tree of navel orange No. 2–11–1, taken from the grove of Col. Frederico da Costa at Matatu, near Bahia. This type of fruit is described under S. P. I. No. 37776."

38935. **Navel orange.**

"Young budded tree of navel orange No. 2–9–5, from the grove of Col. Frederico da Costa at Matatu, near Bahia. This selection is described under S. P. I. No. 37768."

38936. **Selecta orange.**

"*Laranja selecta*, obtained from Dr. Miguel de Teive e Argollo's place, Roma, Bahia. See S. P. I. No. 36947 for description of this variety."

38937. **Orange.**

"The tree from which this bud was taken is growing in the orchard of Col. Demetrio Luiz de Souza, at Cruz do Cosme, near Bahia. Col. Demetrio says that it was budded from a navel tree, but it has evidently reverted and is now producing seedy oranges without navels, but otherwise of the same character as the Bahia navel orange. It is interesting because of this fact, and should be planted in Florida or California to see if it will maintain its present character."

38938 to 38940. CITRUS sp.

Plants.

38938. "Seedlings of *laranja africana*, a large, pummelolike fruit, which is used here principally as stocks for budding to the navel orange. It is not common in this region."

38939. "*Laranja tanja*, another large citrus fruit, resembling a poor pummelo in character. It is used as stock on which to bud the navel orange and for this purpose is considered good, though it is not as widely used as *laranja da terra*, or bitter orange."

38940. "The *limão doce*, or sweet lemon, a fruit which is popular in this region. It resembles an ordinary lemon, but is of a very sweet flavor and entirely devoid of acid."

38941 and 38942. CITRUS NOBILIS DELICIOSA (Tenore) Swingle.

Plants. **Tangerine.**

38941. "A tree of the common tangerine grown at Bahia, which does not appear to be different in any important respects from some of the tangerines cultivated in the United States. It should be tried in California or Florida in comparison with local tangerines to prove its quality."

38942. "The *laranja cravo*, apparently very similar to the tangerine, if not identical with it. It is popular in Bahia, and is generally said to be larger and slightly different from the tangerine, though it appeared to us that the two names were used rather loosely and sometimes even applied to the same thing. For trial in California and Florida."

38892 to 38968—Contd. (Quoted notes by Mr. Dorsett and others.)

38943. SPONDIAS sp. Anacardiaceæ.

"A tree presented by Dr. V. A. Argollo Ferrão. The species is one common at Bahia and is esteemed in this region. Its fruits have not been seen by any members of our party, hence its identity can not be determined, but it is probably one of the commoner tropical species. The fruits are said to be the size of hen's eggs, orange yellow in color, and of good flavor."

Plant.

38944. PSIDIUM ARAÇA Raddi. Myrtaceæ. **Guava.**

"An uncommon species of guava, known here as *Araça*, presented by Dr. V. A. Argollo Ferrão. It is said to have a large fruit and few seeds. The leaves are different in character from most of the guavas. Should be tried in California and Florida."

Plants.

38945. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**
(*Aleurites triloba* Forst.)

"One of the candle-nut or wood-oil trees, found growing in a garden near Bahia. The tree was full of fruit at the time of our visit. Should be tried in comparison with the wood-oil trees now being sent out by this office."

Plants.

For an illustration of the lumbang tree growing in Brazil, see Plate V.

38946. PANICUM sp. (?) Poaceæ.

"*Capim cayana*. A forage grass grown in this region. This is a large, coarse grass grown in very low and wet lands. It can be rooted from single-eye cuttings and grows very rapidly. Should be given a trial in moist regions of the South."

Plants.

38947 to 38968. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.
(*Manihot utilissima* Pohl.) **Cassava.**

"A collection of varieties of mandioca or cassava presented by Dr. V. A. Argollo Ferrão. This set includes varieties which have been assembled at the Centro Agricola from all parts of Bahia State and should be of interest for trial in the southern United States. The varieties, as a rule, vary but little in appearance and are difficult to tell apart in some cases. Those which have the word *aipim* before the varietal name are sweet cassava and are eaten boiled as a vegetable without previous treatment. Others are bitter and are used for the preparation of cassava meal; they must be treated before using to remove the prussic acid."

Plants.

38947. No. 1. *Mulatinho.*
38948. No. 2. *Aipim Pacara.*
38949. No. 4. *Aipim Varudo.*
38950. No. 6. *Aipim Paraguay.*
38951. No. 7. *Gamadura.*
38952. No. 8. *Aparecida.*
38953. No. 9. *Landy.*
38954. No. 10. *Vassoura.*
38955. No. 11. *Prato Cheio.*
38956. No. 12. *Itapicuru.*
38957. No. 13. *Saracura.*
38958. No. 14. *Milagrosa.*

THE LUMBANG (ALEURITES MOLUCCANA (L.) WILLD.) GROWING IN BAHIA, BRAZIL.
(SEE S. P. I. No. 38945.)

An oil-nut tree growing beside the road on the plantation of Coronel Frederico da Costa at Bahia. The tree has pale-green foliage and the fruits contain nutlike seeds, from which lumbang oil is expressed. The kernel is somewhat poisonous, being strongly purgative in effect when eaten. Lumbang oil has been largely used in the manufacture of soap and is now being investigated as a possible paint oil. The tree is known in Hawaii as the kukui and as the candlenut in some other parts of the world. (Photographed by Messrs. Dorsett, Shamel, and Popenoe, December 25, 1913; P14568FS.)

THE QUEENSLAND NUT (MACADAMIA TERNIFOLIA MUELLER), AS GROWN IN CUBA.
(SEE S. P. I. NO. 39144.)

This Australian tree has grown very well in southern California and in Florida, having produced good crops at about 7 years of age. The nuts are about the size of large marbles and of a most delicious flavor, resembling that of Brazil nuts, but more delicate. This tree (S. P. I. 21249) was introduced in the form of a seed from Brisbane in 1907 and planted out in Cuba in January, 1909, by H. A. Van Hermann, on whose estate it is standing. (Photographed by Wilson Popenoe, Santiago de las Vegas, Cuba, July 18, 1914; P16069FS.)

38892 to 38968—Continued.

38959. No. 15. *São Pedro Branca.*
38960. No. 16. *Babu Branca.*
38961. No. 17. *Vassoura Molle.*
38962. No. 18. *Babu Preto.*
38963. No. 19. *Tutano.*
38964. No. 20. *Rio de Janeiro.*
38965. No. 21. *Crioulinho.*
38966. No. 22. *Itaparica.*
38967. No. 23. *Mangue.*
38968. No. 24. *Gravatão.*

38969. PLAGIANTHUS BETULINUS A. Cunningh. Malvaceæ. **Ribbon wood.**

From Epsom, Auckland, New Zealand. Presented by Mr. D. Petrie. Received July 25, 1914.

"From the southern part of our colony and should be hardy enough for your lowlands. The tree is dicœcious and it would be interesting to note how many turn out male and how many female. The tree naturally grows on alluvial flats and by the side of streams that meander through such stations. I doubt if it would thrive anywhere else." (*Petrie.*)

"A tree, varying from 30 to 60 feet in height, with terminal panicles of white flowers. The young shrub forms a mass of tortuous interlacing branches. Leaves lobed or coarsely toothed. Petals rounded at the tips. North and South Island, Chatham Islands." (*Laing and Blackwell, Plants of New Zealand.*)

38970. FEIJOA SELLOWIANA Berg. Myrtaceæ. **Feijoa.**

From Pasadena, Cal. Presented by Mr. D. W. Coolidge, Coolidge Rare Plant Gardens. Received at the Plant Introduction Field Station, Chico, Cal.

"This is a seedling from a fruit that measured 3½ by 2½ inches. Named *Feijoa macrocarpa* by Dr. Franceschi, of Santa Barbara, Cal." (*Coolidge.*)

38971 to 38973. LINUM spp. Linaceæ. **Flax.**

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received July 30, 1914.

38971. LINUM PERENNE L.

Var. *album* Hort.

A white form of the perennial flax, which grows about 2 feet high and is generally cultivated as an ornamental.

38972. LINUM GRANDIFLORUM Desf.

Var. *rubrum* Hort.

38973. LINUM USITATISSIMUM L.

38974. PRUNUS UMBELLATA Elliott. Amygdalaceæ. **Plum.**

From Brooksville, Fla. Collected by Mr. William Gomme, assistant farm superintendent in charge, Plant Introduction Field Station, Brooksville, Fla. Received August 3, 1914.

"Seeds from Mr. Raymond Robbins, Snow Hill."

A tree, sometimes 15 to 20 feet high, with a short, often crooked or inclining trunk 6 to 10 inches in diameter, slender, unarmed branches forming a wide, compact, flat-topped head. Wood heavy, hard, close-grained, dark reddish

38974—Continued.

brown, with thick, lighter colored sapwood of about 30 layers of annual growth. The fruit is used in large quantities in making jellies and jams. Sandy bottom land and along the borders of the forest of long leaf pine, usually in the neighborhood of the coast, from South Carolina to western Louisiana and southern Arkansas. (Abridged from *Sargent, Trees of North America.*)

38975 and 38976. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

From Nyaunglebin, Burma, India. Presented by Rev. E. N. Harris, American Baptist Foreign Mission Society. Received July 30, 1914.

38975. "Small variety." 38976. "Large variety."

38977. TOLUIFERA PEREIRAE (Klotzsch) Baill. Fabaceæ.
(*Myroxylon pereirae* Klotzsch.) **Balsam of Peru.**

From Havana, Cuba. Presented by Mr. J. Pascual Baldwin, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received July 24, 1914.

Source of *balsamo blanco*, or *balsamito*.

38978. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Somma Vesuviana, Italy. Presented by Mr. Gustav Eisen. Received July 27, 1914.

"*Pelese* apricot seeds from Somma Vesuviana." (*Eisen.*)

See S. P. I. No. 38778 for previous introduction and description.

38979 and 38980. BRACHYCHITON spp. Sterculiaceæ.

From Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie, Queensland Acclimatization Society. Received July 30, 1914.

38979. BRACHYCHITON ACERIFOLIUM Mueller. **Flame tree.**
(*Sterculia acerifolia* Cunningh.)

This species of Sterculia, which is a native of New South Wales and Queensland, is a large evergreen tree reaching a height of about 60 feet. The wood of this species, as with all other sterculias, is soft and light and has but a very limited use. The flowers are brilliant scarlet in color and are produced in great abundance. This tree has been introduced into this country and may now be seen growing on streets and lawns in California. A gummy substance exudes from the trunk of this tree, which, of any of the well-known gums, most resembles the tragacanth. (Adapted from *Bailey, Cyclopedia of American Horticulture*, and *Maiden, Useful Native Plants of Australia.*)

38980. BRACHYCHITON LURIDUM Mueller.
(*Sterculia lurida* Muell.)

"This tree, which is commonly known as the *sycamore* or *hat tree*, is a native of northern New South Wales and Queensland. The timber is white, soft, not durable, is easily split, and is occasionally used for shingles. The bark of this tree yields a strong and valuable fiber, similar to bass, or Russian matting." (*Maiden, Useful Native Plants of Australia.*)

38981 and 38982. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

38981. From Santiago de las Vegas, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cuttings received August 4, 1914.

"(No. 5. July 30, 1914.) *Luisa*, a mango of the Philippine type of which the parent tree is growing in the Casa Vivienda garden at the Central Nueva Luisa, Jovellanos, Matanzas Province. Scions have been taken from the original tree and propagated by Mr. A. H. Van Hermann, of this place, from whom these cuttings were obtained.

"The Philippine mango as found here in Cuba is an entirely distinct race from the other mangos found on the island. The type can be distinguished from the others grown here by the pale, grayish mahogany color of the young leaves, the venation of the leaves, the slender, compressed fruits, terminating in a sharp point at the apex, and the thin husk which surrounds the seed.

"The *Cecil* mango of Miami, Fla., is a representative of this race and exhibits the characteristics which are noticeable here in Cuba. The race is believed originally to have come from the Philippines.

"While there is remarkably little variation among the seedlings of this race, there are frequently noticeable differences in the size, brightness of color, and flavor of the fruit. *Luisa* is described by Prof. F. S. Earle, who was, I believe, the first to observe it, as a fruit 4 to 5 inches in length, dull yellowish green in color, with little fiber and a remarkably good flavor. It is considered by Prof. Earle the best mango of the Philippine type which he has seen." (*Popenoe.*)

38982. From Havana, Cuba. Presented by Mr. Charles Hernandez, Director General of Posts and Telegraphs. Received August 3, 1914.

"From the mango grove in the Quinta Ariles near Cienfuegos. The most appreciated of all the kinds of mangos that grow on this island; it is very much looked for by the people of Cienfuegos, and therefore the consumption is limited to only that portion of the country." (*Hernandez.*)

38983. TRIFOLIUM SUBTERRANEUM L. Fabaceæ. **Clover.**

From Adelaide, Australia. Presented by Mr. W. Champion Hackett. Received July 29, 1914.

38984. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Valparaiso, Chile. Presented by Mr. Alfred A. Winslow, American consul.

"Seed of 1913–14 harvest." (*Winslow.*)

38985. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ. **Juga bean.**

From Johannesburg, Transvaal, Union of South Africa. Presented by Mr. J. Burtt Davy. Received August 1, 1914.

"Juga beans; these are proving useful in our bush-veldt country (below 4,000 feet altitude) for stock food; they are crushed and fed to cattle and pigs.

38985—Continued.

Our natives are very fond of these beans, and when well cooked they are considered quite palatable by white people." (*Davy.*)

38986 to 38990.

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914. Quoted notes by Mr. Reed.

38986. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**
(*Aleurites triloba* Forst.)

"A large tree, fruit fleshy, 2 inches long, containing one or two hard-shelled, oily seeds. Oil is extracted from the seeds, and the refuse is used as fertilizer in the Philippines."

38987. CLITORIA TERNATEA L. Fabaceæ. **Butterfly pea.**

"A climbing, somewhat woody vine, stems sometimes one-third of an inch in diameter. Flowers numerous, attractive, deep blue, pale blue, or white."

38988. LACTUCA SATIVA L. Cichoriaceæ. **Lettuce.**

"A variety introduced from China. It grew especially well at the Singalong Experiment Station. Leaves are light green and tender."

38989. PASSIFLORA FOETIDA L. Passifloraceæ. **Passion fruit.**

"A herbaceous ornamental vine with white or pinkish flowers about 1 inch in diameter. Introduced into the Philippines from tropical America."

38990. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"A variety introduced from China. This variety was very productive of seed at the Singalong Experiment Station."

38991 to 39101.

From Darjiling, India. Collected by Mr. L. J. Mackintosh, Clover Cot, at the request of Mr. J. F. Rock, collaborator, of the Bureau of Plant Industry.

38991. ACACIA CATECHU (L. f.) Willd. Mimosaceæ. **Catechu.**

"This species of Acacia is a tree which attains a height of about 80 feet with a stem circumference of 9 feet. The wood is hard, heavy, extremely durable, and is used locally for underground posts particularly and for millwork. The extract prepared from the bark and the heartwood is one of the catechus of medicine or cutch of tannery. This tree may be found growing from India to East Africa at altitudes as high as 5,000 feet." (*Mueller, Select Extra-Tropical Plants, p. 3.*)

38992. ACER sp. Aceraceæ. **Maple.**

38993. ACONITUM FEROX Wallich. Ranunculaceæ. **Aconite.**

"This species is a native of the temperate subalpine Himalayas and may be found growing from Sikkim to Garwhal, at altitudes of 10,000 to 14,000 feet. The stem is 3 to 6 feet in length and is puberulous and leafy. The flowers are large and of a pale dirty-blue color. The five erect follicles are usually densely villous, and in some Garwhal specimens glabrous." (*Hooker, Flora of British India, vol. 1, p. 28.*)

38991 to 39101—Continued.

38994. ACONITUM LURIDUM Hook. f. and Thoms. Ranunculaceæ. **Aconite.**

"This Aconitum is a native of the alpine east Himalayas and may be found growing around Sikkim at altitudes of 14,000 feet. The stem is 2 to 3 feet in length, slightly pubescent, and has very few leaves. The radical leaves are 2 to 3 inches in diameter. The flowers are dull red in color and the sepals are brown tomentose." (*Hooker, Flora of British India, vol. 1, p. 28.*)

38995. ALBIZZIA sp. Mimosaceæ.

38996. ALBIZZIA ODORATISSIMA (L. f.) Benth. Mimosaceæ.

"This is a large, deciduous tree, met with in the sub-Himalayan tract from the Indus eastward, ascending to 3,000 feet in altitude. This tree yields a dark-brown gum in rounded tears, tasteless but soluble in water. The bark is boiled by the Gâro people, together with the leaves of the *Dúgál* (*Sarcochlamys pulcherrima*) and the yarn of their cloth, to give the latter a brownish color. As a medicine the bark is applied externally and is considered efficacious in leprosy and in inveterate ulcers. When boiled in *ghi* the leaves are used by the Santals as a remedy for coughs. The timber made from this tree is used in the manufacture of wheels, oil mills, and furniture. The timber is excellent for all purposes requiring strength and durability, and is considered one of the most valuable of jungle timbers." (*Watt, Dictionary of the Economic Products of India.*)

38997. ALNUS NEPALENSIS D. Don. Betulaceæ. **Alder.**

"This tree, which is a native of the Himalayas, reaches a height of about 60 feet and may be found growing at altitudes between 3,000 and 9,000 feet. The bark of this *Alnus* is used for tanning and dyeing." (*Mueller, Select Extra-Tropical Plants, p. 33.*)

38998. AMOORA ROHITUKA (Roxb.) Wight and Arn. Meliaceæ.

"This is an evergreen tree with a large crown of branches, which is widely distributed over the Malay Archipelago and the Philippine Islands. The fruit is smooth, pale yellow or red in color, and from 1 to 1½ inches in diameter. It is rather soft and fleshy, 3-celled, and 3-valved. A sort of economic oil is extracted from the seed of this fruit." (*Hooker, Flora of British India, vol. 1, p. 559.*)

38999. ANEMONE RUPICOLA Camb. (?) Ranunculaceæ. **Anemone.**

"This species of Anemone is a native of the inner alpine valleys of the Himalayas and may be found growing from Gores to Kashmir to Sikkim at altitudes of 12,000 to 15,000 feet. The radical leaves are long petioled, and the segments are more or less petioled and sharply incised or 3-lobed. The sepals are 1 to 1½ inches in length, broadly oval, and downy on the outside. The flowers, which are 1 or 2 in number, are large and very showy." (*Hooker, Flora of British India, vol. 1, p. 8.*)

39000. BAUHINIA PURPUREA L. Cæsalpiniaceæ. **Orchid tree.**

A small to middle-sized tree; leaves coriaceous, glabrous, somewhat cordate, cleft one-third to one-half their depth, 9 to 11 nerved; lobes obtuse or somewhat acute; flowers in few-flowered axillary and terminal corymbs, fragrant; petals red, one streaked with white on the claw, oblanceolate, acute; fertile stamens, 3 to 4, very long, the rest sterile or abortive; pod 1 foot long. India, Burma, China. One of the finest flower-

38991 to 39101—Continued.

ing small trees in southern Florida. Flowers are borne in the greatest profusion, 3 to 5 inches across, varying in color from almost white to a shade of rich purple, and marked and shaded with many tones. The plant is robust and hardy, growing to a height of 15 feet in less than two years, and blooms all winter and spring. (Adapted from *Bailey, Standard Cyclopedia of Horticulture.*)

39001. BERBERIS sp. Berberidaceæ. **Barberry.**

39002. BETULA CYLINDROSTACHYA Wallich. Betulaceæ. **Birch.**

"A tree native of the Himalayas and may be found growing there at altitudes of 3,000 and 10,000 feet. It reaches a height of about 60 feet, and thrives well along forest streams. The wood is hard, strong, and durable." (*Mueller, Select Extra-Tropical Plants.*)

39003. BOSCHNIAKIA HIMALAICA Hook. f. and Thoms. Orobanchaceæ.

A parasite on Rhododendron roots.

"This is a plant 6 to 18 inches in height which inhabits the temperate and subalpine regions of the Himalayas at altitudes of 8,000 to 10,000 feet at Kumaon and 10,000 to 13,000 feet at Sikkim. The stem of this plant, which is often as thick as a man's thumb, is pale brown in color and is tuberous at the root. The scales are numerous and rigid and range from one-half to three-fourths inch in length. This species differs widely from the Asiatic species *B. glabra* in its much larger size, the flowers being twice as large and the fruit three times as large." (*Hooker, Flora of British India, vol. 4, p. 327.*)

39004. CERASTIUM sp. Silenaceæ.

39005. CHAEROPHYLLUM VILLOSUM Wallich. Apiaceæ.

Distribution.—An herb growing about 4 feet tall, with long white hairs on the stem, found in the Himalayas at an altitude of 5,000 to 12,000 feet, and in the Khasi Hills, in India.

39006. CHRYSANTHEMUM ATKINSONI C. B. Clarke. Asteraceæ. **Chrysanthemum.**

Distribution.—A strongly scented purple-flowered chrysanthemum found on the slopes of the Sikkim Himalayas, in northern India, at an altitude of 13,000 to 15,000 feet.

39007. CLEMATIS MONTANA Hamilton. Ranunculaceæ. **Clematis.**

"This species of Clematis is a woody climber which inhabits the temperate Himalayas from the Indus to Brahmaputra at altitudes as high as 12,000 feet. Always above 8,500 feet in Sikkim and in the Khasi Hills and Maniput, above 4,000 feet." (*Watt, Dictionary of the Economic Products of India.*)

"A deciduous climber of vigorous habit, growing at least 20 feet high; stems smooth except when quite young. Leaves composed of 3 leaflets on a common stalk 2 to 4 inches long, the leaflets short stalked, ovate to lanceolate, pointed, variously and unequally toothed, 1 to 4 inches long, half as wide. Flowers solitary, pure white, 2 to 2½ inches across, each borne on a smooth stalk 2 to 5 inches long. Sepals 4, spreading, oval. Seed vessel elliptical, surmounted by a plumose style, 1½ inches long. Native of the Himalayas, introduced by Lady Amherst in 1831.

38991 to 39101—Continued.

It is quite hardy near London, and is undoubtedly one of the loveliest of all climbers. The flowers appear in May, and being produced singly on long stalks, can only be confused with the white variety of *C. alpina*, and that is not only very different in habit and vigor, but has the petal-like parts of the flower characteristic only of the Atragene group. *C. montana* is a valuable plant for covering arbors, pergolas, and especially verandas, where its long shoots can be allowed to hang down and form a sort of curtain." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 363–364.*)

39008. COTONEASTER MICROPHYLLA Wallich. Malaceæ. **Cotoneaster.**

"This is an ornamental plant which has recently been introduced into our gardens. It is known as *Khariz lúni* in Kashmir and *Garri* in Kumaon. The wood of this species is used in the manufacture of walking sticks and baskets. When mixed with *Parretia* it is used in the construction of twig bridges in Kashmir. The fruit of this species is sweet." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, of low, spreading, or even prostrate habit, rarely more than 2 to 3 feet high unless trained. Branches often slender but rigid, woolly when young. Leaves one-fourth to one-half inch long, half or less than half as wide, ovate or obovate, deep glossy green above, grey and woolly beneath, pointed, rounded, or notched at the apex. Flowers white, one-third inch across, generally solitary (occasionally two or three). Fruit round, scarlet red, one-fourth inch in diameter. Native of the Himalayas up to 11,000 feet, introduced in 1824. This pleasing evergreen is nearly related to *C. buxifolia* on one side, and *C. thymaefolia* on the other. They may be forms of one species, but from *buxifolia* this and *C. thymaefolia* are distinguished by fewer flowers in the cluster and the dwarf habit. The present plant makes a very pretty covering for sloping banks, forming eventually a dense low thicket. Single plants make a pretty evergreen furnishing for the rock garden, but *C. thymaefolia* and *C. congesta* are to be preferred." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 413.*)

39009. CREMANTHODIUM OBLONGATUM C. B. Clarke. Asteraceæ.

"This is usually a robust species and is found growing in the Sikkim Himalayas, near the Tibetan frontier, at altitudes ranging from 12,000 to 16,000 feet. The leaves of this species are 2 to 2½ inches in diameter, pale beneath, with coarsely reticulated nerves. The petioles are stout, 1 to 2 inches in length, and not inflated at the base. The alternate nerves of the leaf distinguish this species from all others except *C. pinnatifidum.*" (*Hooker, Flora of British India, vol. 3, p. 331.*)

39010. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ.
(*Erianthus fulvus* Nees.)

39011. POLLINIA FULVA (R. Br.) Benth. Poaceæ.
(*Pollinia cumingiana* Nees.)

"From the interior of Australia. It is a sweet perennial grass, of which the cattle are so fond that they eat it closely down, thus causing it to die out. It is easily raised by redissemination." (*Mueller, Select Extra-Tropical Plants, p. 181.*)

38991 to 39101—Continued.

39012. ERIGERON MULTIRADIATUS (Lindl.) Benth. Asteraceæ.

"This is one of the most beautiful of all the alpine Compositæ, but very variable and difficult to distinguish from forms of neighboring species, especially *E. alpina*. It is a native of grassy, wet places along the whole length of the Himalayan Range, from Kashmir, where it inhabits altitudes of 7,000 to 9,000 feet, to Sikkim, where it ascends to 12,000 feet. It is a pubescent or hirsute herb, in the small state 6 or 10 inches high, with simple scapelike leafy stems, and numerous radical leaves, and a branched leafy stem. The leaves are usually 4 to 8 inches long, oblanceolate, and narrowed into a rather long petiole." (*Curtis's Botanical Magazine, pl. 6530.*)

39013. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.

"A small or moderate sized tree, found in the outer Himalayas from the Ganges to Bhutan up to 7,000 feet and also in the Kashmir Hills. It is chiefly remarkable for its brilliantly colored flowers, which are usually produced before the new leaves. The wood is rather durable, though light and somewhat open grained. It does not warp or split and takes a good varnish. It is used in the manufacture of light boxes, toys, scabbards, trays, and also for firewood." (*Watt, Dictionary of the Economic Products of India.*)

39014. FRAXINUS FLORIBUNDA Wallich. Oleaceæ. **Ash.**

This Fraxinus, which is commonly known as the Nepal ash, is found growing in the Himalayas at altitudes ranging from 4,000 to 11,000 feet. This tree attains a height of about 120 feet, and the girth of stem is not uncommonly 15 feet. This tree not only serves as a timber tree but also as a fine avenue ornamental. The wood is very useful for oars, plows, and various other implements. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 233.*)

"In 1876 the late Sir George King, then of the Calcutta Botanical Gardens, sent seeds of this fine ash to Kew. Of the trees raised one survives, which was cut to the ground in the winter of 1880–81, but is now about 15 feet high. Although it withstood the frosts of February, 1895, without injury and is now apparently perfectly hardy, its rate of growth with us is not such as to recommend it for general cultivation, except in the milder counties. It is one of the *ornus* group, and in the northwestern Himalayas, where it is native, reaches 80 to 100 feet in height. Its branches are without down and its leaves 10 to 15 inches long. Leaflets usually 7 or 9, oblong (terminal one obovate), tapered at both ends, 3 to 6 inches long, 1 to 2½ inches wide, sharply toothed, smooth above, downy beneath, chiefly on the midrib and veins. Main stalk grooved, stalk of leaflets one-fourth to one-half inch long. Flowers white, in large terminal panicles. It resembles some of the big-leaved forms of *F. ornus*, but the leaflets are normally much larger, more prominently ribbed beneath, and longer pointed. Introduced first, Loudon says, in 1822, but killed in the winter of 1836–37." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 568.*)

39015. GAULTHERIA NUMMULARIOIDES Don. Ericaceæ.

Distribution.—A procumbent shrub with small white flowers and blue-black berries, found throughout the Himalayas at an altitude of 5,000 to 9,000 feet, on the Khasi Hills in India, and in Java.

38991 to 39101—Continued.

"A dwarf evergreen shrub, 4 to 6 inches high, forming dense tufts, and spreading by underground shoots; stems slender and wiry, covered with bristles, and bearing over their whole length leaves one-quarter inch apart in two opposite rows. Leaves leathery, heart shaped, becoming smaller toward the tip of the shoot; one-quarter to five-eighths inch long, about the same wide; the lower surface and the margins are bristly, the upper side is dark, dull green and wrinkled, the lower one very pale polished green; stalk one-eighth inch or less long. Flowers produced singly in the leaf axils from the under side during August; corolla egg shaped, white or tinged with pink, scarcely one-quarter inch long.

"Native of the Himalayas; long cultivated, but still rare in gardens. It makes charming dense tufts of foliage and stems, but needs some shelter. At Kew it thrives well in a damp bed of peat in one of the recesses of the rock garden, where it has not suffered from cold since the frosts of February, 1895. Its roundish leaves, closely and regularly set in two rows, and gradually decreasing in size toward the end of the shoot, with the slender, conspicuously bristly stems, render it quite distinct from any other plant in cultivation. Increased by cuttings." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 580–581.*)

39016. GENTIANA TUBIFLORA Wallich. Gentianaceæ. **Gentian.**

Distribution.—A very low, tufted herb with large blue flowers, found in the alpine Himalayas and in Tibet.

39017. GERBERA KUNZEANA A. Br. and Asch.

39018. GYNURA ANGULOSA DC. Asteraceæ.

Distribution.—An herbaceous composite, sometimes 10 feet tall, with small flower heads and oblong leaves often 2 feet long, found on the temperate slopes of the Himalayas up to an altitude of 4,000 feet, and in the Khasi Hills, in India.

39019. IRIS CLARKEI Baker. Iridaceæ. **Iris.**

"*Iris clarkei* is obviously a member of the *sibirica* group, but differs from all the other species of that group, except *I. prismatica*, in the possession of a solid, as opposed to a hollow, stem. In all other respects it seems perhaps most closely related to the western Chinese members of the group, *I. forrestii* and *I. bulleyana*, with which it agrees in having leaves which are glaucous on the under side but polished and glossy above. The color of the flowers borne by this Iris varies greatly even in the wild state, as was proved by a second series of plants that I owe to the kindness of Mr. Cave. All shades of blue and purple may occur. In its native habitat, *I. clarkei* grows in ground that is swampy for half the year and frozen hard under snow during most of the remaining months. In cultivation it should naturally do best in damp soil, rich in humus, but for some reason or other it has proved difficult to keep, for many plants have died out after flowering. Seedlings are fairly easily raised, though the seeds do not germinate very readily and the plants are of somewhat slow growth.

"Apparently confined to a circumscribed area in the Sikkim and Bhutan region at a height of 6,000 to 11,000 feet." (Abridged from *Dykes, The Genus Iris, p. 29–30.*)

38991 to 39101—Continued.

39020. JUNCUS GRISEBACHII Buchenau. Juncaceæ.

Distribution.—A perennial Juncus growing about 2 feet tall, on the subalpine slopes of the Himalayas in Sikkim, Kumaon, and Bhutan, in northern India.

39021. MALLOTUS sp. Euphorbiaceæ.

39022. MECONOPSIS WALLICHII Hook. Papaveraceæ.

"This is undoubtedly one of the finest of the poppyworts in cultivation. It is an extremely handsome herbaceous biennial and is remarkable, being one of the few if not the only true blue-flowered poppy in cultivation at the present time. It attains a height of 4 to 7 feet and forms a perfect pyramid. It is exceedingly beautiful when in full flower. The blossoms are about 3 inches in diameter, broadly saucer shaped, pendent, and of a lovely shade of blue. The blooms always commence to open at the summit of the stem, then gradually from day to day expand, until the lowest and last bud is reached." (*The Garden, July 12, 1913.*)

39023. MEIBOMIA TILIAEFOLIA (G. Don) Kuntze. Fabaceæ.
(*Desmodium tiliaefolium* G. Don.)

Distribution.—A shrubby legume with lindenlike leaves and long racemes of large pink flowers, found in the temperate and tropical Himalayas up to an altitude of 9,000 feet in northern India.

"A semiwoody plant, which sends up annually from a woody rootstock a number of erect stems 2 to 4 feet high, more or less downy. Leaves trifoliolate, with a main stalk 2 to 3 inches long. Panicles terminal, 8 to 12 inches high, the lower section borne in the uppermost leaf axils. Flowers one-half inch long, varying from pale lilac to dark pink, borne on a slender stalk not quite so long as itself. Native of the Himalayas at 9,000 feet. It flowers from August to October, but needs a hot summer to bring out its best qualities. In cold, wet seasons the flowers do not open at all. Propagated by division of the rootstock in spring. The late Sir Henry Collett called this a 'protean plant'; the form in cultivation is one whose leaves are not very downy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 480,* under *Desmodium tiliaefolium.*

39024. MICHELIA LANUGINOSA Wallich. Magnoliaceæ.

39025. MICHELIA sp. Magnoliaceæ.

39026. MUCUNA IMBRICATA DC. Fabaceæ.

39027. CLEMATIS ZEYLANICA (L.) Poir. Ranunculaceæ. **Clematis.**
(*Naravelia zeylanica* DC.)

"A scandent bush, very plentiful in the tropical Himalayas from East Nepal eastward to Bengal, Assam, and also distributed to Ceylon. Around Calcutta it is one of the most abundant of plants. A fiber is obtained from the stems of this species which is twisted into rough but very useful ropes." (*Watt, Dictionary of the Economic Products of India.*)

38991 to 39101—Continued.

39028. OPHIOPOGON INTERMEDIUS Don. Liliaceæ.

Distribution.—A low, herbaceous perennial with grasslike leaves and a slender scape of small white flowers, found on the temperate slopes of the Himalayas and on the Khasi Hills in India and in Ceylon.

Of possible value for cultivation in shady locations where grasses refuse to grow.

39029. OXYRIA DIGYNA (L.) Hill. Polygonaceæ.

"This species is commonly known as the mountain sorrel. It is a small plant with an acid flavor which occurs in the alpine Himalayas at altitudes of 10,000 feet. It is found in western Tibet up to an altitude of 17,500 feet and is distributed to the mountains of Europe, north Asia, and America. This plant is sometimes eaten as a cooling medicine, and in Chamba the leaves, which have a pleasant sorrel taste, are eaten raw." (*Watt, Dictionary of the Economic Products of India.*)

39030. PARNASSIA sp. Saxifragaceæ.

39031. PEDICULARIS CLARKEI Hook. f. Scrophulariaceæ.

"This more or less hirsute herb is found growing in the alpine Sikkim Himalayas at altitudes ranging between 12,000 and 13,000 feet. The stem is 16 to 20 inches in height and sometimes as thick as the middle finger. The corolla tube, which is rather longer than the calyx, is of a reddish or purplish color. The lower lip of the corolla is small, narrow, and shorter than the upper." (*Hooker, Flora of British India, vol. 4, p. 310.*)

39032. PEDICULARIS FLEXUOSA Hook. f.

Distribution.—An erect or decumbent herb growing 2 feet high, with pinnatifid leaves and bearing leafy spikes of rosy flowers, found on the alpine slopes of the Sikkim Himalayas in northern India at an altitude of 10,000 to 13,000 feet.

39033. PEDICULARIS LACHNOGLOSSA Hook. f.

Distribution.—An erect herb with a simple stem, narrow pinnatisect leaves, and racemes of small red-purple flowers, found at an elevation of 14,000 feet in the Lachen Valley of the Sikkim Himalayas in northern India.

39034. PEDICULARIS LONGIFLORA Rudolph.

Distribution.—A low herbaceous perennial with pinnatifid leaves and yellow flowers, found in the vicinity of Lake Baikal in Siberia.

39035. PEDICULARIS MEGALANTHA Don.

Distribution.—A low herb with pinnatifid leaves and lax racemes of yellow or rose-purple flowers, found on the temperate and subalpine slopes of the Himalayas at an altitude of 7,000 to 15,000 feet, from Kashmir to Sikkim, in northern India.

39036. PEDICULARIS MOLLIS Wallich.

Distribution.—An herbaceous annual 3 feet high with spikes of dark purple flowers, found in the alpine Himalayas in northern India and in Tibet at an altitude of 10,000 to 14,000 feet.

39037. PEDICULARIS SCHIZORRHYNCHA Prain.

39038. PENTAGONIA PHYSALODES (L.) Hiern. Solanaceæ.
(*Nicandra physaloides* Gaertn.)

38991 to 39101—Continued.

39039. PHOTINIA INTEGRIFOLIA Lindley. Malaceæ.

Distribution.—A tall shrub or small tree with corymbs of white flowers and blue berries, found on the lower slopes of the Himalayas up to an altitude of 7,000 feet and in the Khasi Hills in India.

39040. PICEA SMITHIANA (Wall.) Boiss. Pinaceæ.
(*Picea morinda* Link.)

"A lofty tree met with in the northwest Himalayas between 7,000 and 11,000 feet in Sikkim and Bhutan. The wood is white, with reddish brown tinge, and slightly harder than *Abies webbiana*. The wood is extensively used for packing cases, rough furniture, and planking. It crackles and sends out sparks when burning and is consumed very quickly but is much in demand for charcoal. The bark is used for roofing shepherds' huts, and the leaves are collected by the hill people as a manure and they are also used as litter for cattle." (*Watt, Dictionary of the Economic Products of India.*)

39041. PICRORRHIZA KURROA Bentham. Scrophulariaceæ.

"A low, more or less hairy herb, with a perennial woody, bitter rootstock, common in the alpine Himalayas from Kashmir to Sikkim at altitudes of 9,000 to 15,000 feet. The root of this species is used in medicine in cases of fever and dyspepsia and as an ingredient of various purgatives." (*Watt, Dictionary of the Economic Products of India.*)

39042. PIPTADENIA OUDHENSIS Brandis. Mimosaceæ.

39043. PIPTANTHUS NEPALENSIS (Hook.) Sweet. Fabaceæ.

"A shrub, 6 to 10 feet high, possessing the habit of laburnum, native of the temperate Himalayas from Sikkim to Bhutan at altitudes ranging from 7,000 to 9,000 feet. The branches are downy, the stipules are small, connate, and amplexicaul. The leaflets are glabrescent, lanceolate, 2 to 4 inches in length, and narrowed at both ends. The flowers, which range from 12 to 20 in number, occur in subdense racemes." (*Hooker, Flora of British India, vol. 2, p. 62.*)

"A shrub or low tree with very pithy young shoots, naturally 8 to 12 feet high, but growing taller against walls, where it is generally placed in England. At Kew it is deciduous, but in milder climates it retains more or less foliage during the winter. Leaves alternate, consisting of three lanceolate, stalkless leaflets, 3 to 6 inches long, about one-third as wide, with a marginal nerve; smooth except when quite young, dark green above, glabrous beneath; the common leafstalk 1½ to 2 inches long. Racemes stiff, erect, 2 to 3 inches long, and as much broad, hairy, and set with hairy bracts. Flowers pea shaped, 1½ inches long, the stalk up to 1 inch long, and, like the brown calyx, very hairy; petals bright yellow. Pod 3 to 5 inches long, three-fourths inch wide.

"Native of the Himalayas, introduced to England in 1821. It thrives well against a wall, where it flowers in May, but is not permanently hardy in the open air at Kew. A shrub of exceptionally vigorous appearance, it is, nevertheless, not long lived. It is easily propagated by seeds, which it ripens in quantity, and owing to its dislike of root disturbance, should be grown in pots until planted in permanence. Its flowering sprays resemble those of the herbaceous genus Thermopsis. Wilson has

38991 to 39101—Continued.

recently introduced from China a Piptanthus almost or quite identical with *P. nepalensis*, which may, he thinks, prove hardier." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 194.*)

39044. PITTOSPORUM FLORIBUNDUM Wight and Arnott. Pittosporaceæ.

"A small tree found in the subtropical Himalayas from Sikkim to Garhwal, ascending to 5,000 feet in the hills. The medicinal virtues and the utilization of this plant have recently been brought to light. The bark is bitter and aromatic and is said by the natives to possess narcotic properties. The plant contains an aromatic resin, yellow in color, and having very tenacious properties. The wood is light colored, strong and tough, but of small size." (*Watt, Dictionary of the Economic Products of India.*)

39045. PLEUROSPERMUM APIOLENS C. B. Clarke. Apiaceæ.

Distribution.—A low herb with pinnate leaves, belonging to the parsnip family and having an odor similar to that of celery, found in the interior valleys of the Sikkim Himalayas in northern India at an altitude of 11,000 to 14,000 feet.

39046. PLEUROSPERMUM BRUNONIS (DC.) Bentham. Apiaceæ.

Distribution.—A low herb with pinnate leaves found on the slopes of the Himalayas from Kashmir to Nepal in northern India at an altitude of 9,000 to 14,000 feet.

39047. PLEUROSPERMUM HOOKERI C. B. Clarke. Apiaceæ.

Distribution.—A low herb belonging to the parsnip family, found on the slopes of the Sikkim Himalayas in northern India at an altitude of 10,000 to 16,000 feet.

39048. POLYGONUM VACCINIFOLIUM Meissner. Polygonaceæ.

"This is apparently a common Himalayan plant which has proved sufficiently hardy to bear the open air of this climate [England]. It is a low-growing, neat plant, and by its numerous slender stems trailing along the ground and rooting at the joints it soon forms a spreading, compact patch. The leaves are quite concealed by the copious spikes of bright rose-colored flowers, which continue blooming from August to November uninterruptedly. It is well adapted for the front part of rock work, in situations where it will not be subject to drought in summer. This plant promises to become a great favorite in our gardens as a bedding-out plant, especially where autumn flowers are desired. (*Curtis's Botanical Magazine, pl. 4622.*)

39049. RHEUM ACUMINATUM Hook. f. and Thoms. (?) Polygonaceæ.

Rhubarb.

"This is the common rhubarb of the Sikkim Himalayas and very closely resembles in most respects the well-known *Rheum emodi.* It inhabits rocky places, often amongst bushwood in the subalpine and alpine regions of the Himalayas of Sikkim and East Nepal, at elevations of 9,000 to 13,000 feet. The stems are pleasantly acid, and, though more dry and stringy than those of *R. emodi*, may be used for tarts. The root is spongy and but slightly, if at all, medicinal." (*Curtis's Botanical Magazine, pl. 4877.*)

38991 to 39101—Continued.

39050. RHEUM NOBILE Hook. f. and Thoms. Polygonaceæ. **Rhubarb.**

"A handsome herbaceous plant, with a stem 3 to 4 feet high and as thick as the wrist at the base. It is found in the inner ranges of the Sikkim Himalayas at altitudes between 13,000 and 15,000 feet. The root resembles that of the medicinal rhubarb, but is spongy and inert. The acid stems are eaten both raw and boiled, and the dried leaves afford a substitute for tobacco." (*Watt, Dictionary of the Economic Products of India.*)

39051. RHODODENDRON ANTHOPOGON Don. Ericaceæ. **Rhododendron.**

"A small shrub, with very aromatic, strongly scented leaves, common at altitudes between 11,000 and 16,000 feet on the alpine Himalayas, from Kashmir to Bhutan, and distributed to central and northern Asia. The leaves of this plant are aromatic, and their smoke is considered by the natives to be useful in some diseases. They are supposed to contain stimulant properties and are collected and exported to the plains, where they are officinal. This is one of the species which is thought by the Bhutias to excite the headache and nausea which attends ascents to the high elevations of the eastern Himalayas." (*J. D. Hooker. In Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, 2 feet or less high, of compact habit; young branchlets hairy and covered with brown scurf. Leaves oval or ovate, 1 to 1½ inches long, one-half to three-fourths inch wide, dark, rather glossy green above, covered with brown scales beneath; stalk one-fourth inch long. Flowers sulphur colored, one-half to three-fourths inch across, produced in a small terminal cluster, 1 to 1½ inches wide. Corolla thin, almost transparent; tube hairy inside, expanding at the mouth into five wavy lobes; calyx lobes oblong, pale green, one-eighth inch long, fringed at the margin; stamens five (sometimes up to eight), very short, and included within the tube; flower stalk scaly, one-sixth inch or less in length. Flowers in April.

"Native of the high Himalayas from Cashmere eastward, up to 16,000 feet altitude, where it covers large areas; introduced in 1820. The whole plant has a strong, aromatic, slightly acrid odor, especially when crushed. It is an interesting little plant and one of the hardiest of Himalayan species, but not in any way showy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 341.*)

39052. RHODODENDRON ARBOREUM Smith. Ericaceæ. **Rhododendron.**

"A tree which often attains a height of 25 feet, common on the temperate Himalayas from the Indus to Bhutan, at altitudes between 5,000 and 10,000 feet. It is frequent on the Khasi Hills, between 4,000 and 6,000 feet, and occurs also on the hills of southern India and Ceylon, very abundant in Manipur, and on the Kareen Hills in Burma. The leaves of the young trees are poisonous and are used medicinally for headaches. The flowers have a sweet-sour taste and are said to make a good subacid jelly. They are, in some parts of the Himalayas, eaten by the natives, who become intoxicated if they consume a large quantity. The wood is soft, reddish white or reddish brown in color, and even grained, and apt to warp and shrink. The wood is chiefly used for fuel and charcoal, but it is also sometimes employed for building and for making dishes." (*Watt, Dictionary of the Economic Products of India.*)

38991 to 39101—Continued.

"A small evergreen tree ultimately 30 to 40 feet high, with a thick, sturdy trunk, the branches forming a head as wide as the tree is high, and reaching to the ground. Leaves narrowly oblong, tapering at both ends, 4 to 7 inches long, 1 to 2 inches wide, smooth above, covered beneath with a coat of silvery scales; stalk one-half to 1 inch long. Flowers blood red, borne in a compact hemispherical head, 4 to 5 inches through, sitting close on the terminal whorl of leaves. Corolla bell shaped, 1½ to 2 inches across; stamens 10; calyx very small; flower stalk downy.

"Native of the outer Himalayas, where it is widely spread; introduced in 1817. This species is one of the most variable of all rhododendrons, but the form just described, with crimson flowers and silvery undersurface of the leaves, may be taken as the type." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 342.*)

39053. RHODODENDRON ARBOREUM CAMPBELLIAE (Hook. f.) Vilmorin and Bois. Ericaceæ. **Rhododendron.**

"Flowers purplish rose; leaf reddish beneath." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 342.*)

39054. RHODODENDRON ARBOREUM Smith. Ericaceæ. **Rhododendron.**

See S. P. I. No. 39052 for description.

39055. RHODODENDRON BARBATUM Wallich. Ericaceæ. **Rhododendron.**

"A tree met with in the temperate Himalayas from Kumaon to Bhutan, at altitudes between 8,000 and 12,000 feet. The wood is pinkish red in color and shining and of slow growth. It weighs about 39 pounds to the cubic foot." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub or small tree, the bark peeling from the branches and leaving them blue-gray and smooth; winter buds viscid; branches yellowish, sometimes smooth, sometimes bristly. Leaves in a terminal cluster, oblong, heart shaped at the base, terminated by a short, fine point, 4 to 9 inches long, 1 to 3 inches wide, dark dull green and smooth above, pale and usually smooth beneath; stalk one-half to 1 inch long, conspicuously bristly on the upper side and at the base of the midrib. Flowers densely packed in a hemispherical truss about 4 inches wide, blood red. Corolla bell shaped, 1½ inches across, five lobed; stamens 10; calyx with five smooth, ovate lobes, one-fourth inch long.

"Native of the Himalayas up to 12,000 feet, introduced about 1849. This rhododendron is hardy in a sheltered spot at Kew, where it flowers in April. It is somewhat gaunt of habit, but worth growing for its marvelous richness of color. It is, of course, much finer in Cornwall and similar places. There is some variation in the bristliness of the stems and leaves. In one form the young wood is furnished with bristles, and the leafstalk is bristly all round; bristles up to one-half inch long." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 344–345.*)

39056. RHODODENDRON CAMELLIAEFLORUM Hook. f. Ericaceæ. **Rhododendron.**

"This rhododendron is a native of the Nepal and Sikkim Himalayas at elevations of 9,000 to 12,000 feet. It usually grows on the limbs of lofty trees, where its branches hang down and are several feet in length. In looser forests, where light and air are better distributed, it is found

38991 to 39101—Continued.

growing on the ground and rocks. The stems are 2 to 6 feet in length and are as thick as a goose quill. The leaves are 2 to 3 inches in length, spreading, very thick and coriaceous, deep green above, and very stout. The flowers are 1½ inches in diameter, white, and of a very thick texture." (*Curtis's Botanical Magazine, pl. 4932.*)

39057. RHODODENDRON CAMPANULATUM Don. Ericaceæ.

Rhododendron.

"This is a large shrub found in the inner Himalayas from Kashmir to Bhutan, at altitudes between 9,000 and 14,000 feet. It occurs also on the outer ranges of the Chor and Kedarkanta and is very abundant in Sikkim. The leaves of this species are exported to the plains, where they are ground up with tobacco and used as snuff, which is said to be useful in colds and hemicrania. The wood is light pinkish in color and moderately hard." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub of stiff, spreading habit, 6 to 12 feet high, more in diameter; bark peeling; young shoots smooth. Leaves oval, 3 to 5½ inches long, 1¼ to 2½ inches wide; abruptly tapering at the apex, tapering, rounded, or slightly heart shaped at the base, smooth above, densely covered beneath with a red-brown felt; stalk one-half to 1 inch long, often reddish. Flowers rosy purple of numerous shades, 2 inches across, produced during April in rather loose clusters about 4 inches wide. Corolla broadly bell shaped, with 5 notched lobes, the upper ones dark purple spotted; calyx downy, small and scarcely lobed; stamens 10, smooth or sometimes downy towards the base; flower stalk about 1 inch long.

"Native of the interior Himalayas of Sikkim and Nepal; introduced in 1825. This is perhaps the hardiest and most satisfactory of Himalayan rhododendrons near London, where it flowers regularly and profusely. In very cold weather (and it withstands uninjured 32 degrees of frost) its leaves roll themselves up tightly, giving the shrub a very curious aspect. It is very variable in the color of the flowers, which are sometimes quite pale, sometimes of a bright bluish purple, sometimes lilac; in the amount of felt at the back of the leaf; and in the color of the leaf scales that accompany the young bursting shoots, which are sometimes rich crimson, sometimes green." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 347.*)

39058. RHODODENDRON CAMPYLOCARPUM Hook. f. Ericaceæ.

Rhododendron.

"This is a small bush 6 feet high, roundish in form, of a bright, cheerful green hue, which, when loaded with its inflorescences of surpassing delicacy and grace, claims precedence over its more gaudy congeners and has been regarded by some as the most charming of the Sikkim rhododendrons. The plant exhales a grateful honeyed flavor from its lovely bells, and a resinous sweet odor from the stipitate glands of the petiole, pedicels, calyx, and capsules." (*Curtis's Botanical Magazine, pl. 4968.*)

"An evergreen shrub, 4 to 8 feet high, of neat, bushy habit. Leaves 2½ to 4 inches long, half as wide, heart shaped or rounded at the base, the apex with a short, abrupt tip, upper surface dark glossy green, lower one vividly blue-white; stalk one-half to 1 inch long, thickly set with

38991 to 39101—Continued.

stalked glands when young. Flowers pale yellow, slightly fragrant, in loose terminal clusters of 6 to 8; corolla bell shaped, 2½ to 3 inches across; lobes five, rounded; calyx scarcely one-quarter inch across, the five shallow lobes edged with dark, stalked, viscid glands; flower stalk about 1 inch long, and, like the ovary and base of style, glandular; stamens 10, downy at the base.

"Native of the Sikkim Himalayas at 12,000 feet. Although not one of the hardiest species, it has lived outside in the sheltered Rhododendron Dell at Kew for over 20 years with no other protection than the situation affords. It is at present the best of the larger species with yellow flowers (apart from Azalea) in cultivation, although the color, in some forms especially, is too pale and sulphurlike to give hopes of founding upon it a race of golden-flowered kinds. Perhaps the finest example of this rhododendron is in the Earl of Morney's garden at Whiteway, in Devonshire, which, some years ago, was 8 feet high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 348.*)

39059. RHODODENDRON CILIATUM Hook. f. Ericaceæ. **Rhododendron.**

"This species grows in the Sikkim Himalayas in the inner ranges only, in wet, rocky places, rarely in woods, at elevations ranging from 9,000 to 10,000 feet. It is a small, very rigid shrub, growing in clumps 2 feet high, generally in moist, rocky places. The odor of this plant is faintly resinous and pleasant, and resembles in some respects *R. barbatum*, but it is widely different in stature and habit." (*J. D. Hooker, The Rhododendrons of Sikkim-Himalaya, pl. 24.*)

"An evergreen shrub of stiff, wide-spreading habit, rarely more than 3 to 4 feet high out of doors near London, but 9 feet high and twice as much in diameter in Cornwall; young branchlets covered with bristly hairs. Leaves oval or obovate, tapering sometimes equally to both ends, sometimes more gradually toward the base, 2 to 4 inches long, three-fourths to 1½ inches wide, bristly on the upper surface and on the margins, scaly beneath; stalk bristly, one-fourth to one-third inch long. Flowers beautiful rosy red in bud, pale pink on opening, becoming almost white with age, 2½ inches across, produced three to five in a cluster during March and April; corolla widely bell shaped, with broad notched lobes; calyx lobes rounded ovate, bristly on the margins, stamens 10, hairy at the base, flower stalks one-half inch long, bristly.

"Native of Sikkim, introduced to Kew in 1850. It is hardy there, but really needs milder conditions to bring out its best qualities. In Mr. Shilson's garden at Tremough, near Falmouth, some years ago I saw a specimen of the larger dimensions given above. Near London it needs a very sheltered position, and in such a spot, although it grows slowly, it frequently gives a very charming display in April if the weather be kind." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 350.*)

39060. RHODODENDRON ROYLEI Hook. f. Ericaceæ. **Rhododendron.**
(*Rhododendron cinnabarinum* Hook. f.)

"This is a shrub which attains a height of 4 to 8 feet, met with on the eastern Himalayas at elevations of 10,000 to 12,000 feet. The leaves are universally considered poisonous to cattle and goats. It is employed as fuel, but the smoke causes the eyes to inflame and the face to swell." (*Watt, Dictionary of the Economic Products of India.*)

38991 to 39101—Continued.

"An evergreen shrub, 6 to 10 feet high, somewhat thin and sparse of habit, the branches long and slender, scaly when young. Leaves 2 to 4 inches long, three-fourths to 1¼ inches broad, oval, tapering about equally to each end, smooth, and of a grayish green metallic luster above, scaly beneath, and varying in color from glaucous green to reddish brown; stalk one-third inch long. Flowers funnel shaped and, like those of Lapageria, 1¼ to 2 inches long, very variable in color, ordinarily of a dull cinnabar red, produced during May and June, from five to eight in terminal heads. In other forms the corolla is orange red outside, yellowish within, sometimes greenish. Calyx with four short, broadish lobes and one longer narrow one, or sometimes with all five nearly equal, scaly. Stamens 10, scarcely so long as the corolla, hairy at the base; flower stalk one-third inch long, scaly.

"Native of Sikkim and Bhutan; introduced in 1849. This distinct and striking species is chiefly remarkable for the variability of the color of its flowers and the under surface of its leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 351.*)

39061. Rhododendron dalhousiae Hook. f. Ericaceæ. **Rhododendron.**

"Of all the Sikkim rhododendrons this is perhaps the one which has excited the greatest interest, partly from the great size and beauty of the fragrant flowers and partly from the peculiar place of growth, generally in its native localities among moss, with ferns and Aroideæ, and upon the limbs of large trees. This rhododendron is a native of East Nepal, Sikkim, and Bhutan at elevations of 6,000 to 9,000 feet. It is a straggling bush, 6 to 8 feet high; the stems are clothed with a reddish papery bark, and the branches are straggling in distant whorls, each branch bearing its leaves and flowers only at the extremity, three to five in number, very large and fragrant." (*Curtis's Botanical Magazine, pl. 4718.*)

39062. Rhododendron falconeri Hook. f. Ericaceæ. **Rhododendron.**

"A moderate-sized tree or frequently a gregarious shrub, abundant in the eastern Himalayas from east Nepal to Bhutan at altitudes between 9,000 and 13,000 feet. The wood is of a reddish white color and shining, with a satiny lustre, takes a beautiful polish, is hard, and does not warp. It is easily worked and is not apt to split. It is admirably adapted for use in the parched and arid climate of Tibet, and the Bhutias make from it cups and spoons and many other useful domestic articles." (*Watt, Dictionary of the Economic Products of India.*)

"A large shrub or a small tree, ultimately over 30 feet high, with stiff, very thick, somewhat sparse branches, woolly when young. Leaves oval or oblong, 6 to 12 inches long, 2½ to 6 inches wide (sometimes larger); very stout, thick, and strongly veined, the upper surface dark green, curiously wrinkled, but otherwise smooth, the lower surface covered with a dense, rust-colored felt; stalk 1 to 2 inches long. Flowers about 2 inches across, creamy white, shaded with lilac and marked with a conspicuous dark-purple blotch at the base, fragrant, produced in spring in large terminal clusters 6 to 9 inches across, the flowers tightly packed. Corolla bell shaped, 2 inches long, its lobes varying in number from eight to ten;

38991 to 39101—Continued.

calyx scarcely observable; stamens 12 to 16, shorter than the corolla; style about as long as the corolla, stout, and surmounted by the large knoblike stigma; flower stalk downy, 1 inch long.

"Native of the Himalayas; introduced about 1850. This is one of the noblest of all the genus, but not very hardy. After many trials it has been given up at Kew as hopeless, the plants lingering for years, but always in a miserable condition. Yet in the Duchess garden at Belvoir Castle there is a specimen about 16 feet high now in perfect health, although it suffered in the great frost of February, 1895. But this garden is elevated and is in the form of an amphitheater facing south, a very favorable position compared with low-lying, flat country. In the south coast gardens in Ireland and in Cornwall it is perfectly at home." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 354.*)

39063. RHODODENDRON FULGENS Hook. f. Ericaceæ. **Rhododendron.**

"A small tree or large shrub of the Nepal and Sikkim Himalayas, found at altitudes of 10,000 to 14,000 feet. The wood is of a gray color, darker in the center, and moderately hard and even grained." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, 6 to 12 feet high, with stiff branches and peeling bark. Leaves oval, 3 to 4 inches long, 1½ to 2 inches wide, rounded at the end except for a short, abrupt tip, somewhat heart shaped at the base, covered beneath with a thick, reddish brown felt. Flowers blood red, 1 to 1¼ inches across, densely packed in hemispherical trusses 3½ inches wide. Corolla bell shaped, with five shallow, notched lobes; calyx very small, shallowly lobed; stamens 10, much shorter than the corolla, not downy.

"Native of Nepal and Sikkim at 10,000 to 14,000 feet; introduced about 1849. This species is very similar to *R. campanulatum* in foliage, but is not quite so hardy nor so free in growth. Its flowers are the richest red of any hardy species except *R. thomsoni* (which is of quite a different type) and *R. barbatum*. They appear during March and April and provide a feast of color unequalled in cold districts so early in the year. A suitable spot for it is some sheltered outskirt of woodland, especially where the flowers may be protected from early morning sunlight. At Kew the various titmice are very fond of pecking a hole through the base of the corolla, presumably to get at the honey. An ornamental feature of the plant is the crimson bracts that accompany the young growth in the spring." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 357–358.*)

39064. RHODODENDRON GRANDE Wight. Ericaceæ. **Rhododendron.**

"A tree frequent in the Sikkim and Bhutan Himalayas at altitudes of 7,000 to 11,000 feet. The wood is of a yellowish color with a darker heartwood, shining, soft, and even grained." (*Watt, Dictionary of the Economic Products of India.*)

39065. RHODODENDRON LANATUM Hook. f. Ericaceæ. **Rhododendron.**

"This species of rhododendron is found on the rocky spurs of the humid mountains and gullies of the Sikkim Himalayas at elevations of 10,000 to 12,000 feet. It is a large shrub or small tree, with the trunk 6 inches in diameter at the stoutest part, irregularly and repeatedly branching. The branches are much gnarled and bare of leaves, and are

38991 to 39101—Continued.

covered with a dark-colored rugged bark, very different from the prevailing beautiful papery clothing of the genus. The flowers are a pale sulphur color." (*J. D. Hooker, Rhododendrons of Sikkim-Himalaya.*)

39066. RHODODENDRON LEPIDOTUM Wallich. Ericaceæ. **Rhododendron.**

"A shrub found on the temperate and alpine Himalayas, from Kashmir to Bhutan at altitudes between 8,000 and 15,000 feet. The medicinal properties of this plant are similar to those of *R. anthopogon* [S. P. I. No. 39051]." (*Watt, Dictionary of the Economic Products of India.*)

"A low, evergreen, sometimes nearly deciduous shrub, usually 1 to 2 feet high in this country, but said to be 4 feet high in the Himalayas; young wood, leaves, leafstalk and flower stalks dotted thickly with minute scales. Leaves oblong, 1 to 1½ inches long, about one-half inch wide, only hairy on the margins when young. Flowers rosy crimson, produced singly or a few together during June, each about 1 inch across, flat and saucer shaped, and borne on a stalk 1 to 1½ inches long; corolla tube very short, lobes rounded. Stamens about 10, hairy toward the base, not protruded; calyx lobes one-eighth inch long, rounded.

"Native of the lofty interior ranges of the Nepal and Sikkim Himalayas, up to 16,000 feet altitude, and in Yunnan. It is hardy at Kew, and one of the most distinct and interesting of dwarf rhododendrons. Sir Joseph Hooker mentions varieties with golden-yellow flowers and greenish yellow flowers, which do not appear to be in cultivation. Seeds are frequently borne." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 366.*)

39067. RHODODENDRON SETOSUM Don. Ericaceæ. **Rhododendron.**

"A small and elegant shrub found in Sikkim and Nepal at altitudes between 13,000 and 16,000 feet. The natives attribute the oppression and headaches attending the crossing of the loftiest passes to the strongly resinous odour of this rhododendron. A useful volatile oil of no less marked character than that of the American Gaultheria might probably be obtained from the foliage by distillation." (*Watt, Dictionary of the Economic Products of India.*)

"A dwarf evergreen shrub, 6 to 12 inches high, of close, bushy habit; young shoots densely clothed with pale bristles and minute down. Leaves oblong, tapered at the base, rounded at the apex, three-eighths to five-eighths inch long, bristly on the margins, very scaly above, rather glaucous and less scaly beneath. Flowers 3 to 8 in a terminal cluster; corolla 1 inch across, reddish purple, lobed to two-thirds of its depth; calyx comparatively large, scaly and downy, with five ovate lobes one-fourth inch long; stamens hairy at the base; flower stalk scaly, slender, one-fourth inch long.

"Native of the Himalayas up to 16,000 feet. The plant is very distinct in its bristly character and strong resinous odor. Introduced in 1825, this curious alpine species is now very rare. It thrives well in the Edinburgh Botanic Garden, but in the South misses its winter covering of snow and is often excited into growth too early." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 378–379.*)

38991 to 39101—Continued.

39068. RHODODENDRON WIGHTII Hook. f. Ericaceæ. **Rhododendron.**

"This species has very handsome trusses of large, pale yellow flowers. It is very rare in collections, although it has been in cultivation in this country for many years. It is found growing abundantly in woody valleys in the Himalayas and on the spurs of all the mountains at an elevation of 12,000 to 14,000 feet." (*Gardener's Chronicle, May 31, 1913.*)

"An evergreen shrub of bushy habit, and up to 10 feet high, with very leathery, dark-green leaves, 6 to 8 inches, sometimes more, long, 2½ to 3 inches wide, covered beneath with a reddish brown felt. Flowers bell shaped, pale yellow, blotched on the upper side with crimson, about 1½ inches across, the five lobes shallow, notched, and reflexed. Calyx lobes five, shallow, broadly triangular, and, like the flower stalk, which is 1½ inches long, hairy; stamens 10, shorter than the corolla, downy at the base; ovary clothed with a white felt; style smooth, much longer than the stamens.

"Native of the Himalayas up to 14,000 feet; very rare in cultivation, but existing in the open ground in Miss A. Mangles's collection at Littleworth, near Farnham, also at Kew (under glass). It is a rhododendron of great beauty and distinctness in its pale yellow flowers, which are borne as many as 20 together in rather loose heads." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 385–386.*)

39069. RUBUS sp. Rosaceæ.

39070. SALIX TETRASPERMA Roxburgh. Salicaceæ. **Willow.**

"This species is found in the mountains of India growing at altitudes of 2,000 to 7,000 feet. This thick-stemmed willow is worthy of a place on banks of watercourses. The twigs can be worked into baskets, the wood serves for gunpowder, and the foliage for cattle fodder." (*Mueller, Select Extra-Tropical Plants, p. 488.*)

39071. SALIX sp. Salicaceæ. **Willow.**

39072. SAUSSUREA DELTOIDEA (DC.) C. B. Clarke. Asteraceæ.

Distribution.—A composite growing 8 feet tall with panicles of large, purple flowers, found in the central and eastern Himalayas from Garwhal to Bhutan, in northern India, at an altitude of 6,000 to 11,000 feet.

39073. SAUSSUREA sp. Asteraceæ.

39074. SAXIFRAGA PURPURASCENS Hook. f. and Thoms. Saxifragaceæ. **Saxifrage.**

"This beautiful and hardy species comes from the temperate regions of the Sikkim Himalayas, where it was discovered growing in wet places at an elevation of 10,000 to 14,000 feet. Though closely allied to the Himalayan *S. ligulata* and the Siberian *S. crassifolia*, it is extremely different from and far more beautiful than any of these species. Nothing, indeed, can exceed the bright glossy green of the leaves, which are elegantly margined with red, or the deep, bright, vinous red-purple of its scape and inflorescence." (*Curtis's Botanical Magazine, pl. 5066.*)

39075. SEDUM ASIATICUM (Don) Sprengel. Crassulaceæ.

"This species of Sedum, which is a native of the Himalayas, is cultivated in Europe and possibly in America. It reaches a height of 6 to 12

38991 to 39101—Continued.

inches, but seems to suffer from the wetness of an ordinary border in winter and should probably be wintered under glass. The leaves are opposite, linear, coarsely and irregularly toothed. The flowers, which occur in compact, globose cymes, are yellow in color and make their appearance in summer. In India it is said to have red flowers." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

39076. SEDUM ROSEUM (L.) Scopoli. Crassulaceæ.

"This Sedum is a neat-growing plant, suitable for rockeries or the front rows of borders. It reaches a height of 8 to 10 inches, the leaves are scattered and oblong, the flowers are greenish purple, in a terminal flat-topped cyme 1 inch across. This species of Sedum may be found growing in Europe, North America, and the Himalayas." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

39077. SELINUM TENUIFOLIUM Wallich. Apiaceæ.

"A hardy perennial herb with finely cut, fernlike foliage, and a stem about 8 feet high, branched, with numerous umbels of white flowers. The ultimate segments of leaves are narrowly lanceolate and acute. This plant was offered as a novelty in America in 1899 and later recommended as a foliage plant for single lawn specimens." (*L. H. Bailey, Cyclopedia of American Horticulture.*)

39078. SENECIO UNCINELLUS DC. Asteraceæ.
(*Senecio densiflorus* Wall.)

Distribution.—A yellow-flowered shrubby sneezewort with white-woolly leaves, found on the lower slopes of the central and western Himalayas and on the Khasi Hills in India.

39079. SENECIO RAPHANIFOLIUS Wall. Asteraceæ.
(*Senecio densiflorus* Wall.)

Distribution.—A yellow-flowered herbaceous perennial of the aster family with lyrate-pinnatifid leaves and red pappus on the fruiting heads, found on the slopes of the central and eastern Himalayas in northern India at an altitude of 10,000 to 14,000 feet.

39080. SENECIO SCANDENS Buch.-Ham. Asteraceæ.

A woody climbing plant reaching a height of several yards, with slender, somewhat hairy branches. The leaves are rather small, grayish green, short stemmed, lance-elliptic and acute, with small triangular teeth on the margins, and are either simple or have 2 or 3 leaflets at the base. The yellow flower heads, about three-fourths of an inch wide, occur in lax terminal corymbs. The home of this species is in the Himalayas and in China. It should not be confused with the commonly cultivated *S. scandens* Hort., which is *S. mikanioides* Otto. (Adapted from *Bulletin of Miscellaneous Information, Royal Gardens, Kew, Appendix III, 1910, p. 82.*)

39081. SENECIO sp. Asteraceæ.

39082. SORBUS INSIGNIS (Hook. f.) Hedl. Malaceæ.
(*Pyrus insignis* Hook. f.)

Distribution.—A small tree, one of the most beautiful of the whole genus, found on the slopes of the Sikkim Himalayas at an altitude of 8,000 to 11,000 feet.

38991 to 39101—Continued.

39083. POUPARTIA AXILLARIS (Roxb.) King and Prain. Anacardiaceæ. (*Poupartia fordii* Hemsl.)

39084. STEPHANIA ROTUNDA Lour. Menispermaceæ.

Distribution.—A climbing shrub with peltate leaves and umbels of small berries, found on the tropical and temperate slopes of the Himalayas in India, and in Siam and Cochin China.

"*Cu-mot-tu-nhien.* Twining shrubby stem, very long, unarmed, glabrous; leaves peltate, trigonal, rounded, pointed, glabrous, alternate, petioled; flowers diœcious, in compound lateral umbels; male flowers, calyx with six subacute spreading sepals, corolla none; the andrœcium is represented at maturity by a cylindrical column at the top of which is found a circular disk, bordered by an anther, unique in appearance, opening by a marginal, horizontal, and continuous fissure; female flower, calyx with one lateral sepal, corolla with two lateral petals; ovary unilocular, 1-ovuled; berry small, oval, monospermous. The large, rounded, wrinkled, tuberous root of rusty color, with filiform rootlets, is extremely bitter and tonic." (*Lanessan, Les Plantes Utiles des Colonies Françaises.*)

39085. THALICTRUM FOLIOLOSUM DC. Ranunculaceæ.

"This is an erect rigid shrub found in the temperate Himalayas at altitudes between 5,000 and 8,000 feet and in the Khasi Hills at 4,000 and 6,000 feet. The root of this plant is used in the preparation of various medicines for ague and as a tonic in convalescence from acute diseases. The root of this species contains a large quantity of berberine that is so combined as to be readily soluble in water." (*Watt, Dictionary of the Economic Products of India.*)

39086. TRACHYDIUM OBTUSIUSCULUM (DC.) C. B. Clarke. Apiaceæ.

Distribution.—An herbaceous perennial related to the parsnip, growing a foot high on the Sikkim Himalayas in northern India, at an elevation of 11,000 to 13,000 feet.

39087 to 39092. (Undetermined.)

39093. OXYSPORA PANICULATA (Don) DC.

39094. HYMENODICTYON EXCELSUM (Roxb.) Wallich.

39095. VENTILAGO sp.

39096. MORUS sp.

39097 to 39100. (Undetermined.)

39101. STACHYS SERICEA Wallich. Menthaceæ.

An erect herb, 2 to 4 feet in height, with usually simple stems; oblong, sharply toothed or crenate leaves; and purple-spotted pink flowers crowded in axillary whorls, forming more or less interrupted, long, terminal spikes. The plant is covered with long, silky hairs.

Distribution.—Western Asia to northern India.

39102 to 39141.

From Darjiling, India. Presented by Mr. G. N. Cave, Lloyd Botanic Gardens, through Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture.

39102. AESCULUS ASSAMICUS Griffith. Æsculaceæ.
(*Aesculus punduana* Wall.)

"This is a moderate-sized deciduous tree, found in northern Bengal, in the Khasi Hills, Assam, and Burma, ascending to 4,000 feet. The leaflets are five to seven, shortly petioled. Panicles narrowly lanceolate, nearly equaling the leaves, lower pedicels longer. Petals white and yellow. The wood is white, soft, and close grained, but very rarely used. It weighs about 36 pounds per cubic foot." (*Watt, Dictionary of the Economic Products of India.*)

39103. ALBIZZIA ODORATISSIMA (L. f.) Benth. Mimosaceæ.

For previous introduction and description, see S. P. I. No. 38996.

39104. ALBIZZIA CHINENSIS (Osbeck) Merrill. Mimosaceæ.
(*Albizzia stipulata* Boiv.)

"A large deciduous, fast-growing tree, met with in the subalpine tract from the Indus eastward, ascending to 4,000 feet in Oudh, Bengal, Burma, and South India. This tree is attracting considerable attention in Assam. It has been found that tea flourishes better under it than when exposed to the sun. The most favorable explanation of this fact is that the leaves manure the soil; the roots, which do not penetrate deep, tend to open up the soil, while the shade is not so severe as to injure the tea, the leaves closing at night and during the early morning. The gum which flows copiously from the stem is used by the Nepalese for sizing their 'Daphne' paper. The sapwood of this tree is large and white, while the heartwood is brown and generally not durable. The wood is used in the manufacture of cart wheels, wooden bells, and in Bengal it has been tried for tea boxes, for which purposes it will probably be well suited." (*Watt, Dictionary of the Economic Products of India.*)

39105. BERBERIS NEPALENSIS (DC.) Spreng. Berberidaceæ. **Barberry.**

"A shrub or small tree with large or small leaves, common on the outer Himalayas, from the Ravi eastward to the Khasi and Naga Hills, at altitudes above 5,000 feet. A yellow dye is extracted from this plant by the Bhutias and Nagas, but used only to a small extent. The wood, which has a handsome yellow color, is hard and might be used for inlaying." (*Watt, Dictionary of the Economic Products of India.*)

"An evergreen shrub, sometimes 20 feet high in the Himalayas, but rarely more than one-third as high in Britain. Leaves with as many as 25 leaflets, usually about 15. Leaflets dark, glossy green, obliquely ovate, lanceolate, 1½ to 4½ inches long, the lowest pair broader and shorter than the others, spine-toothed, of firm leathery texture. Flowers yellow, borne in slender racemes 6 to 12 inches long. Berries oval or nearly globose, about one-fourth inch in diameter, covered with blue-white bloom.

"Native of the Himalayas, this barberry is too tender to thrive well except in the milder parts of Britain or in exceptionally sheltered spots. At Kew it lives but a short time out of doors, although it has succeeded well in a sheltered spot in the gardens of Belvoir Castle for a good many

39102 to 39141—Continued.

years. It has by some authorities been united with *B. japonica*, but is sufficiently distinguished by its more numerous, smaller, even-sized, and more tapering leaflets and the brilliantly polished upper surface. For the milder counties it is a most desirable shrub, commencing to flower as early as October, but at its best in March and April. Several forms of it exist, some of which approach *B. japonica*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 245.*)

39106. CORYLUS FEROX Wallich. Betulaceæ.

"This is a small tree, native of Nepal and Sikkim, found growing at altitudes ranging from 8,000 to 10,000 feet. The fruit, which has an edible kernel, is covered with a prickly cup. The wood is pinkish white in color, moderately hard and even grained." (*Watt, Dictionary of the Economic Products of India.*)

39107. CRACCA CANDIDA (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.)

This species, which is a close relation of *Tephrosia purpurea*, is a shrub which attains a height of about 10 or 11 feet. It makes a great deal of soft growth and covers the ground well. This shrub has been very well reported on in the east and in various parts of the West Indies. A characteristic feature is its long tap root. (Adapted from *Bulletin of the Trinidad Agricultural Society, August 12, 1912*, and *Hooker, Flora of British India.*)

39108. DICENTRA THALICTRIFOLIA (Wall.) Hook. f. and Thoms. Papaveraceæ.

"This species of Dicentra is a native of the temperate Himalayas and may be found growing from Nepal to Bhutan at elevations of from 4,000 to 8,000 feet and in the Khasi Hills at 5,000 feet. This plant is very similar to *D. scandens* and probably not specifically distinct, but the capsule is broader, three-fourths of an inch long, thick, fleshy, and very tardily dehiscent. The style is stouter and the seeds finely granulate near the hilum and coarsely so on the back. It is common in Sikkim, and the pods are drier and most dehiscent at higher elevations." (*Hooker, Flora of British India, vol. 1, p. 121.*)

39109. DILLENIA PENTAGYNA Roxb. Dilleniaceæ.

"A deciduous tree of Oudh, Bengal, Assam, Central, South and Western India, and Burma. In the younger trees the leaves are sometimes as much as 2 feet in length and the flowers, buds, and fruit, when green, are eaten by the natives. The tree flowers in March and April and later produces a berry which is said to have an agreeable acid flavor resembling that of *Grewia asiatica*. The wood is tough, moderately hard, and of a reddish gray color. The wood is used in the construction of ships, rice mills, and in the manufacture of charcoal, which is of very good quality. The leaves of this tree are sold in the bazaar at Poona as a substratum for thatching." (*Watt, Dictionary of the Economic Products of India.*)

39110. ELAEOCARPUS SIKKIMENSIS Mast. Elaeocarpaceæ.

"A tree native of the eastern Himalayas and found growing at Sikkim and Assam at elevations of about 5,000 feet. The leaves are glabrous, 8 inches long and 3 inches wide. The racemes are erect, half the length of the leaves, and the pedicels are thinly pilose. The flowers are about

39102 to 39141—Continued.

one-half inch in diameter, and the petals are cuneate and slightly silky at the back." (*Hooker, Flora of British India, vol. 1, p. 402.*)

39111. ERIOBOTRYA PETIOLATA Hook. f. Malaceæ.

"This plant is a native of the eastern Himalayas and is found growing in Sikkim and Bhutan at elevations of 5,000 to 9,000 feet. The leaves are firmly coriaceous and vary from 6 to 9 inches in length and 3 to 3½ inches in width. The panicles are from 3 to 6 inches in length and broad, branched from the base, very spreading and clothed with a rusty tomentum, as are the very young leaves on both surfaces. The flowers are one-half inch in diameter, shortly pediceled and not crowded." (*Hooker, Flora of British India, vol. 2, p. 370.*)

May possibly have some value as a stock for the loquat.

39112. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.

"This is a small, moderate-sized tree, found in the outer Himalayas from the Ganges to Bhutan up to 7,000 feet in the Khasi Hills. This species is chiefly remarkable for brilliantly colored flowers. The wood is soft and slightly spongy." (*Watt, Dictionary of the Economic Products of India.*)

39113. FICUS BENGALENSIS Linn. Moraceæ. **Banyan tree.**

"A large tree found in the subalpine tract and lower slopes of the Deccan and is so common in Mysore that it may be said to be characteristic of the arboreal vegetation in many parts of that province. This tree attains a height of 70 to 100 feet and sends down roots from its branches, thus indefinitely expanding its horizontal growth. This tree yields an inferior rubber, and lac is also collected from it. A coarse rope is prepared from the bark and the aerial roots. Paper is also reported to have formerly been prepared in Assam from the bark and to a small extent is still so prepared in Madras. The milky juice is externally applied for pain and bruises and as an anodyne application to the soles of the feet when cracked or inflamed. It is also applied to the teeth and gums as a remedy for toothache. The wood is of a grayish color, is moderately hard, and as it is durable under water it is used in the manufacture of well curbs. It is sometimes used for boxes and door panels." (*Watt, Dictionary of the Economic Products of India.*)

39114. FICUS HOOKERI Miquel. Moraceæ.

A tree occasionally found in the Sikkim Himalayas and the Khasi Hills at altitudes ranging from 1,000 to 6,000 feet. The leaves are thinly coriaceous, long petioled, broadly elliptic or subobovate, with a short, broad, obtuse, entire cusp. The base is rounded or slightly narrowed, 3-nerved, receptacles in axillary pairs. The large basal bracts are united in an entire cartilaginous cup which envelops the lower third of the ripe receptacle. (Adapted from *Hooker, Flora of British India, vol. 5, p. 505*)

39115. FRAXINUS FLORIBUNDA Wallich. Oleaceæ. **Ash.**

"This is a large deciduous tree found growing in the Himalayas from the Indus to Sikkim, between 5,000 and 8,500 feet. A concrete, saccharine exudation called manna is obtained from the stem of this tree and is employed as a substitute for the officinal manna. The sugar contained in this exudation, called mannite, differs from cane and grape sugar in not being readily fermentable, though under certain conditions it does ferment and

39102 to 39141—Continued.

yields a quantity of alcohol varying in strength from 13 to 33 per cent. Like the officinal manna, this is used for its sweetening and slightly laxative properties. The wood is white with a reddish tinge, soft to moderately hard in structure, resembling in some respects the European ash. This tree is very valuable and is used in the manufacture of oars, jampan poles, ploughs, platters, spinning wheels, and for many other purposes." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. No. 39014 for previous introduction and description.

39116. GYNURA NEPALENSIS DC. Asteraceæ.

"A tall, handsome species, native of the temperate Himalayas from Kumaon to Bhutan at altitudes ranging from 2,000 to 5,000 feet and in the Martaban Mountains near Maulmein at altitudes of 4,000 to 5,000 feet. The lower portion of the stem is as thick as the little finger, and the leaves are 3 to 7 inches in length, acuminate, usually irregular, coarsely toothed, and broadly pubescent on both surfaces." (*Hooker, Flora of British India, vol. 3, p. 337.*)

39117. HYPERICUM OBLONGIFOLIUM Choisy. Hypericaceæ.
(*Hypericum cernuum* Roxb.)

"A glabrous shrub, 3 to 6 feet in height, native of the western temperate Himalayas from Kumaon to Sikkim at altitudes ranging from 5,000 to 7,000 feet. The branches of this species are cylindrical in form, glaucous when young, and the leaves, which are minutely dotted, are sessile and range from 1 to 3 inches in length. The cymes are 3 to 5 flowered and terminal, while the flowers are 2 inches in diameter, at first white, then gradually turning to yellow." (*Hooker, Flora of British India, vol. 1, p. 253.*)

39118. HYPERICUM PATULUM Thunb. Hypericaceæ.

"This is a small, glabrous shrub found growing throughout the temperate Himalayas from Bhutan to Chamba and in the Khasi Hills. The scented seeds of this species are employed as an aromatic stimulant in Patna, to which place they are exported from Nepal." (*Watt, Dictionary of the Economic Products of India.*)

"A dwarf shrub in this country [England], but said to grow as high as 6 feet in Japan and the Himalayas. Leaves 1 to 2½ inches long, ovate, deep green above, glaucous beneath. Flowers 2 inches across, borne in a cyme at the end of the shoot; petals bright golden yellow, overlapping, roundish; sepals broadly ovate, one-third inch long. Stamens in five bundles.

"Introduced to Kew from Japan by Oldham in 1862; a native of China and the Himalayas. The type is not absolutely hardy, and almost always has its stems cut back to ground level during the winter. These spring up again the following season from 1 to 2 feet high, and flower from July to October. After a few years the shoots are apt to become more and more weakly and it becomes necessary to renew the stock from cuttings. The only species with which it can be confounded are *H. hookerianum*, from which it differs in the branchlets being two-edged, especially just beneath the flowers; *H. lysimachioides*, which has narrow, linear-lanceolate sepals; and *H. uralum*, with flowers half the size." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 639.*)

39102 to 39141—Continued.

39119. INDIGOFERA DOSUA Hamilton. Fabaceæ.

"This is a shrub of the temperate, central, and eastern Himalayas from Simla to Bhutan and Assam at altitudes ranging from 6,000 to 8,000 feet. The flowers of this *Indigofera* are said to be eaten in Kangra as a potherb. This species is prized as fodder for sheep and goats, and buffaloes are also said to be very fond of it." (*Watt, Dictionary of the Economic Products of India.*)

39120. JASMINUM HUMILE Linn. Oleaceæ. **Jasmine.**

"A small, erect, rigid shrub, native of the subtropical Himalayas from Kashmir to Nepal, at altitudes of 2,000 to 5,000 feet; found also in South India and Ceylon, from 2,000 to 6,000 feet. It is widely cultivated throughout the gardens in India. In the Kuram Valley a yellow dye is extracted from the roots, and it is curious that this fact should be unknown to the hill tribes in India, where the plant is equally abundant. A dyestuff, much used in Chittagong under the name of *juri* may, however, possibly be derived from this jasmine. Like many other jasmines, this species bears flowers which yield an aromatic essential oil used in native perfumery. The milky juice which exudes on an incision in the bark of this plant is alleged to have the power of destroying the unhealthy lining walls of chronic sinuses and fistulas." (*Watt, Dictionary of the Economic Products of India.*)

"It is a dwarf plant with nearly always ternate leaves and one to four flowers on a stalk. It was cultivated by Capt. Tradescant in 1656, but being rather tender and not so ornamental as either *revolutum* or *wallichianum*, has probably disappeared from cultivation. It used to be known as *Italian jasmine*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. I, p. 662.*)

39121. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook. f.) **Cherry.**

Distribution.—An evergreen cherry 30 to 40 feet high with drooping racemes of yellowish white flowers, found on the temperate slopes of the Himalayas from Nepal to Sikkim in northern India at an altitude of 5,000 to 7,000 feet.

39122. MALLOTUS NEPALENSIS Muell. Arg. Euphorbiaceæ.

"This is a small tree of the central and eastern part of the Himalayas from Nepal to Sikkim and may be found growing at altitudes ranging from 5,000 to 7,000 feet and in the Khasi Hills at from 4,000 to 5,000 feet. The wood is white and soft and makes growth moderately fast, five rings to the inch radius." (*Watt, Dictionary of the Economic Products of India.*)

39123. MEIBOMIA FLORIBUNDA (G. Don) Kuntze. Fabaceæ.
(*Desmodium floribundum* G. Don.)

Distribution.—A shrubby legume with trifoliate leaves and copious racemes of large pink flowers, found on the tropical and temperate slopes of the Himalayas up to an elevation of 7,000 feet and in the Khasi Hills in India.

39124. MEIBOMIA TILIAEFOLIA (G. Don) Kuntze. Fabaceæ.
(*Desmodium tiliaefolium* G. Don.)

"A large deciduous shrub of the Himalayas from the Indus to Nepal, found growing at elevations of from 3,000 to 9,000 feet. It is also said

39102 to 39141—Continued.

to be met with in Tavoy. The bark of this tree yields an excellent fiber which is extensively employed in rope making and in many parts of the Himalayas it is used for the manufacture of paper. The roots are considered carminative, tonic, and diuretic and are also used in cases of bilious complaints. The wood is of a yellowish brown color with a dark center. The leaves afford a useful fodder." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. No. 39023 for previous introduction and description.

39125. MICHELIA CATHCARTII Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood is a dark olive brown and moderately hard. The wood of this species is used for planking and would do well for tea boxes." (*Watt, Dictionary of the Economic Products of India.*)

39126. OSBECKIA STELLATA Don. Melastomaceæ.

"One of the 29 species of melastomaceous plants which are found in the Indian peninsula. They are mostly herbs, sometimes shrubs, and are worth cultivating on account of their beautiful flowers; otherwise they are of little economic value. This species is a small shrub, native of the eastern Himalayas and the Khasi Hills at altitudes ranging from 4,000 to 8,000 feet, common about Darjiling. The wood is light brown and moderately hard." (*Watt, Dictionary of the Economic Products of India.*)

39127. PIERIS VILLOSA Hook. f. Ericaceæ.

"This is a small tree resembling *P. ovalifolia* in leaves, flowers, and fruits. It is a native of the alpine Himalayas at altitudes ranging from 9,000 to 10,000 feet. The leaves are hardly more villous beneath than in some forms of *P. ovalifolia.* The calyx teeth are very narrow downwards, only shortly connate; the corolla is rather wider, but not definitely separated by the absence of horns at the apex of the filament." (*Hooker, Flora of British India, vol. 3, p. 461.*)

39128. PIPTANTHUS NEPALENSIS (Hook.) Sweet. Fabaceæ.

See S. P. I. No. 39043 for description.

39129. PITTOSPORUM FLORIBUNDUM Wight and Arnott. Pittosporaceæ.

"A small tree found in the subtropical Himalayas, from Sikkim to Garhwal, ascending to 5,000 feet on the hills. The medicinal virtues and utilization of this plant have recently been brought to light. The bark is bitter and aromatic and is said by the natives to possess narcotic properties. The plant contains an aromatic resin, yellow in color and having very tenacious properties. The wood is light colored, strong and tough, but of small size." (*Watt, Dictionary of the Economic Products of India.*)

39130. RUBUS NIVEUS Thunb. Rosaceæ. **Raspberry.**

"This is a large, rambling, very valuable plant met with in the temperate Himalayas, from Kashmir to Sikkim, at altitudes between 5,000 and 10,000 feet, and also on the Khasi Hills, in the western peninsula,

39102 to 39141—Continued.

on the higher Ghats from Kanara southward, in Burma and Ceylon. The fruit, which is red, orange, or of a glaucous blue-black color, is somewhat dry, but very palatable. Large quantities are imported into the bazaars of the hill stations for sale to Europeans. The fruit of this species is similar in flavor to the common English blackberry, but vastly superior and its cultivation might be rendered very productive. The use of this species as a hedge plant is also recommended." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. Nos. 32453 and 38574 for previous introductions.

39131. RUBUS PEDUNCULOSUS Don. Rosaceæ. **Raspberry.**
(*Rubus niveus* Wall.)

"A large, rambling shrub met with in the temperate Himalayas, from Kashmir to Bhutan, at altitudes between 6,000 and 10,000 feet on the west, and 5,000 to 11,000 feet on the east. This species yields a fruit which is very succulent and pleasantly tasted. It is yellowish or reddish brown in color." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. No. 38575 for previous introduction.

39132. RUBUS PANICULATUS Smith. Rosaceæ. **Raspberry.**

"A very rambling climber, which has all the parts, except the upper surface of the leaves, covered with a dense tomentum. It is found in the temperate Himalayas from Hazara to Sikkim, at altitudes between 3,000 and 8,000 feet, and in the Khasi Mountains between 4,000 and 5,000 feet. The fruit consists of numerous large, round, black drupes and is edible but insipid in flavor. The wood is soft and porous with very large medullary rays." (*Watt, Dictionary of the Economic Products of India.*)

See S. P. I. Nos. 23870 and 38576 for previous introductions.

39133. SORBUS CUSPIDATA (Spach) Hedlund. Malaceæ.
(*Pyrus vestita* Wall.)

"A deciduous tree which is a native of the eastern Himalayas and may be found growing from Garhwal to Sikkim at altitudes between 9,000 and 10,000 feet. The fruit is edible and is sometimes used as food." (*Watt, Dictionary of the Economic Products of India.*)

"A deciduous tree of large size in a wild state, but rarely seen more than 35 feet high under cultivation. The habit is rather gaunt; branches few, thick, covered when young with a white wool, which afterwards falls away, leaving the shoots of a smooth, purplish brown. Leaves oval or ovate, 5 to 7 (sometimes 9) inches long by 2½ to 5 inches wide, the margins toothed, sometimes doubly so or slightly lobed; upper surface covered at first with a white cobweblike down, but soon becoming smooth, lower surface covered with a persistent thick felt, at first white or yellowish white, becoming grey later; nerves parallel, in 10 to 17 pairs; stalk one-third to 1 inch long. Flowers white, five-eighths inch across, produced in late May or early June in substantial corymbs 2 to 3 inches wide; petals woolly within; stalks and calyx very woolly.

"Native of the Himalayas, introduced in 1820, and the most striking in its foliage of all the whitebeam group. Although nearly a century has elapsed since it was first brought into cultivation, very few specimens of

39102 to 39141—Continued.

large size exist in this country [England]. The largest of these which I know is at Buckland St. Mary, Chard, which a few years ago was nearly 40 feet high. It grows well for some years, and then suddenly and without any apparent reason, sometimes in the middle of the summer, will droop and die." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 299,* under *Pyrus vestita.*)

39134. SORBUS INSIGNIS (Hook. f.) Hedl. Malaceæ.
(*Pyrus insignis* Hook. f.)

"A small, very robust tree, native of the Sikkim Himalayas at altitudes ranging from 8,000 to 11,000 feet. The branchlets are nearly as thick as the little finger, and the bud scales are rigid, chestnut brown in color and shining. The younger parts are clothed with long, rather silky, rusty brown wool, while the older parts are glabrous." (*Hooker, Flora of British India, vol. 2, p. 377.*)

39135. SORBUS MICROPHYLLA Wenzig. Malaceæ.
(*Pyrus microphylla* Wall.)

"This Pyrus, which is a native of the temperate Himalayas at altitudes of 10,000 to 14,000 feet, is possibly only a form or young state of *P. foliolosa* or *aucuparia,* but a very much more slender, subscandent plant with more deeply serrate leaflets. The Sikkim variety of this plant has red flowers, and the fruits are white or pale blue in color." (*Hooker, Flora of British India, vol. 2, p. 376.*)

39136. POUPARTIA AXILLARIS (Roxb.) King and Prain. Anacardiaceæ.
(*Poupartia fordii* Hemsl.)

"This is a rather common tree at low altitudes in western Hupeh and in Szechwan, and is chiefly confined to the valleys. It grows from 15 to 25 meters tall and the trunk is often a meter in diameter near the base. The branches are massive and form an oval or rounded head; the bark is grey, deeply fissured and persistent; the leaves are deciduous. The flowers are polygamodiœcious; the male and female flowers are borne in many-flowered panicles which spring from the axils of scales and also from the axils of the lower leaves. The hermaphrodite flowers are much larger than the unisexual flowers, and are borne in short racemes which are commonly 1-flowered by abortion and never more than 3 or 4 flowered. The leafy shoots bearing panicles of unisexual flowers look very much like branches of *Rhus succedanea* L. The fruit of this tree is yellow, oval, from 2.5 to 3 cm. long, rounded on the summit. It is eaten by the Chinese. The vernacular name is '*Hsuan tsao.*'" (*Sargent, Plantae Wilsonianae, vol. 2, p. 172–173,* under *Spondias axillaris.*)

39137. STYRAX HOOKERI Clarke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (*Watt, Dictionary of the Economic Products of India.*)

39138. SYMPLOCOS THEAEFOLIA Don. Symplocaceæ.

"An erect tree of the eastern Himalayas, from Nepal to Bhutan, occurring at altitudes between 4,000 and 6,000 feet. It is also common in

39102 to 39141—Continued.

the Khasi Hills and in Martaban. The leaves of this species are used as an auxiliary in dyeing with *Morinda tinctoria* and lac. The wood is white and soft and is used for fuel and for rough house posts." (*Watt, Dictionary of the Economic Products of India.*)

39139. TALAUMA HODGSONI Hook. f. and Thoms. Magnoliaceæ.

"One of the 15 species of Magnoliaceæ which are distributed throughout the Tropics of eastern Asia, Japan, and South America. This species is a native of India and may be found in the forests of the Sikkim Himalayas and the Khasi Hills at elevations ranging from 4,000 to 5,000 feet. The wood is very soft and even grained, and weighs about 21 pounds per cubic foot." (*Watt, Dictionary of the Economic Products of India.*)

39140. TRACHYCARPUS MARTIANA (Wall.) Wendl. Phœnicaceæ. **Palm.**

See S. P. I. No. 38739 for previous introduction.

39141. VACCINIUM GLAUCO-ALBUM Hook. f. Vacciniaceæ.

Distribution.—A shrub with large white persistent bracts under the pinkish flowers which are borne in dense racemes, found on the slopes of the Himalayas at an altitude of 7,500 to 10,000 feet, from Sikkim to Bhutan, in northern India.

"An evergreen shrub, 2 to 4 feet high; young stems smooth. Leaves stiff and hard in texture, oval or ovate, 1½ to 2½ inches long, five-eighths to 1¼ inches wide; pointed, with bristlelike teeth on the margins, green and smooth above, of a vivid blue-white and slightly bristly on the midrib beneath. Racemes slightly downy, 2 to 3 inches long, produced from the leaf axils and conspicuous for their large, persistent, blue-white bracts, edged with bristles. Corolla pinkish white, one-fourth inch long, cylindrical; calyx smooth, shallowly lobed. Berries one-third inch in diameter, globose, black, covered with blue-white bloom.

"Native of the Himalayas at 9,000 to 10,000 feet altitude, only hardy in the milder parts of the kingdom. It is remarkable for the vivid blue-white bloom on the fruit, bracts, and under surface of the leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 626.*)

39142. COUMAROUNA ODORATA Aublet. Fabaceæ. **Tonka bean.**
(*Dipteryx odorata* Willd.)

From La Guayra, Venezuela. Presented by Mr. Thomas W. Voetter, American consul, who received them from the consular agent at Ciudad Bolivar. Received August 5, 1914.

For previous introduction and description, see S. P. I. No. 35904.

39143. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

From Johannesburg, Transvaal, Union of South Africa. Presented by Mr. J. Burtt Davy. Received July 30, 1914.

"Known as *imboomba* among the Zulus and grown by them for food. It is said to be a rank grower and prolific bearer; the 49 seeds were taken from 3 pods. It is grown down the coast as far as Pondoland, and should prove useful in Florida and elsewhere in the Gulf States." (*Davy.*)

39144. MACADAMIA TERNIFOLIA Mueller. Proteaceæ. **Queensland nut.**

From Sydney, Australia. Purchased from Anderson & Co. Received at the Plant Introduction Field Station, Chico, Cal., August 4, 1914.

For description see S. P. I. No. 18382.

For illustrations of the tree, foliage, and flowers of the Queensland nut, see Plates VI and VII.

39145. MALUS SYLVESTRIS Miller. Malaceæ. **Apple.**

From Sophia, Bulgaria. Presented by Mr. Alaricus Delmard. Received August 11, 1914.

"Scions of the apples which have been found immune from *Schizoneura lanuginosa*. Dr. Lambreff informs me that he has experimented with these in orchards infested with that blight, and that while the other varieties all suffered, these have remained immune." (*Delmard.*)

39146. AMORPHOPHALLUS GIGANTEUS Blume. Araceæ.

From Medan, Deli, Sumatra. Presented by Mr. L. P. De Bussy. Received August 11, 1914.

Distribution.—An herbaceous perennial which sends up from a large bulb an enormous pinnatifid leaf and a purplish spathe 9 inches long surrounding a white spadix, which is followed by a large red fruit; found in Java and Borneo.

39147. GOSSYPIUM BARBADENSE L. Malvaceæ. **Cotton.**

From Lima, Peru. Presented by Mr. A. Martin Lynch. Received July 1, 1914.

"*Mit Afifi* cotton."

39148. ORYZA SATIVA L. Poaceæ. **Rice.**

From Lima, Peru. Presented by Mr. A. Martin Lynch. Received July 30, 1914.

"Rice seed called *Carolina* in the northern part of Peru, and cultivated in the valley of Pacasmayo and Lambayeque." (*Lynch.*)

39149 to 39151. HORDEUM VULGARE L. Poaceæ. **Peruvian barley.**

From Peru. Presented by Mr. William W. Handley, American consul general, Callao, Peru. Received August 5, 1914. Quoted notes by Mr. Handley.

39149. "Peruvian barley grown in the southern district of Arequipa, Peru."

39150. "Peruvian barley grown in the southern district of Cuzco, Peru."

39151. "Peruvian barley grown in the southern district of Juliaca, Peru."

39152 and 39153.

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914. Quoted notes by Mr. Reed.

39152 and 39153—Continued. (Quoted notes by Mr. H. R. Reed.)

39152. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

"Spanish *Zarraceno* or *Candeal.* Grown in Cagayan Province. Introduced into the Philippines 50 years ago. Is planted at the end of the rainy season; is grown on highlands and matures in 90 days."

Candeal is recognized in Argentina, where it is commonly grown, as a variety of *T. durum* Desf. This number, however, is *T. aestivum* L.

39153. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

"A plant 3 to 9 feet high, flowers large, yellow. Is cultivated for ornamental purposes and grows wild in the Philippines. Samples of fiber were sent to cotton firms in the United States, and comments were very favorable."

39154. BAMBOS sp. Poaceæ. **Bamboo.**

From Burma, India. Presented by Rev. Robert Harper, American Baptist Mission, Pyinmana. Received August 8, 1914.

"The bamboo from which I gathered the seeds was not very large, but it was tall and graceful. Several bunches were in seed, but I collected the best bunches." (*Harper.*)

39155. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Mount Coffee, Liberia, Africa. Presented by Mr. Henry O. Stewart. Received August 18, 1914.

39156. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914.

39157. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Stockholm, Sweden. Presented by Mr. Ernest L. Harris, American consul general. Received August 19, 1914.

"Alfalfa seed in this country is called *Blå Lucerne* or *Medicago sativa.* I have been informed that the same is imported from Germany, but that the actual country of origin is Hungary. Alfalfa is grown in Sweden, but the seed does not ripen. While still green it is cut and used as fodder or for mixing with other animal feeds." (*Harris.*)

39158 to 39162. ZEA MAYS L. Poaceæ. **Corn.**

From Yachowfu, China. Presented by Dr. Edgar T. Shields, West China Baptist Mission, who received them from Mr. Yoh Peh Yin, Lusan, near Yachow. Quoted notes by Dr. Shields.

39158. "No. 1. Yellow corn, planted about April 5, or may be planted 10 days earlier or later. They reckon that this is the very best variety for feeding cattle. The country people make corn cakes of the meal, mixing the same with boiling water and afterwards either baking or steaming the cake. They say that cakes made of this variety of corn digest more slowly than any of the other kinds, but the flavor of the cake is good. This corn ripens in about 100 days after planting. They plant from three to five grains in a hill, afterwards thinning it out to two stalks."

FOLIAGE AND FLOWERS OF THE QUEENSLAND NUT (MACADAMIA TERNIFOLIA MUELLER), AS GROWN IN FLORIDA. (SEE S. P. I. NO. 39144.)

The leaves are evergreen and of a thick, tough character, giving the tree an attractive appearance. (Photographed, natural size, by Wilson Popenoe, Miami, Fla., April 18, 1915; P16345FS.)

SPATHODEA CAMPANULATA BEAUV., A STRIKINGLY HANDSOME ORNAMENTAL TREE FOR FLORIDA. (SEE S. P. I. No. 39222.)

This tall, straight tree from western tropical Africa has succeeded remarkably well in India and Java as a shade tree. Originally brought from Jamaica by Mr. W. J. Matheson, it is now the largest specimen in the United States. With its large, bright orange-red flowers produced at the tips of the branches, it is very ornamental and conspicuous at a distance. (Photographed by Wilson Popenoe, at Four Way Lodge, the residence of Mr. Matheson, Cocoanut Grove, Fla., April 15, 1916; P16716FS.)

39158 to 39162—Continued. (Quoted notes by Dr. E. T. Shields.)

39159. "No. 2. White corn, planted about April 5. It has a finer taste and digests easier than No. 1."

39160. "No. 3. Red corn, planted about April 5. The taste resembles that of the yellow or No. 1 [S. P. I. No. 39158]. This is the best variety for making their whisky, which is a very intoxicating drink. Whisky is also made from No. 1, but this is the variety most used."

39161. "No. 4. Red and yellow striped. The same as No. 1, except for the color."

39162. "No. 6. White corn. This variety is to be planted 10 to 15 days later than the other varieties (which are planted about April 5). The taste is very good, and the corn is very gelatinous."

39163. NICOTIANA TABACUM L. Solanaceæ. **Tobacco.**

From the Philippine Islands. Presented by Mr. H. R. Reed, acting superintendent, Singalong Experiment Station. Received August 7, 1914.

"A variety of tobacco commonly grown in Cagayan Valley. Plants grow 4 feet high, leaves large." (*Reed.*)

39164. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Tumbala, Chiapas, Mexico. Presented by Mr. Stanford N. Moreson. Received August 26, 1914.

39165. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie. Received August 26, 1914.

"*Quacsofoca.* The standard fodder cane grown here for stock food purposes and known as the Indian cane. Amongst other seedlings tested for this purpose we have secured one that from all points is an improvement upon the old standard. I am sending some cuttings which you will be able later on to distribute to some of your Southern States. We have found it here of superior value from the standpoints of food value, softness, hardiness against low temperatures, and weight per acre. It is a prodigious yielder." (*Corrie.*)

39166 and 39167. PENNISETUM spp. Poaceæ.

From Salisbury, Rhodesia. Presented by the Department of Agriculture. Received August 24, 1914.

39166. PENNISETUM SCHIMPERI Richard. **Napier's fodder grass.**

39167. PENNISETUM MACROURUM Trinius. **M'fufu grass.**

Distribution.—A perennial grass growing 3 feet or more high in the central and coast region of South Africa.

39168 and 39169.

From Sibpur, Calcutta, India. Presented by the superintendent, Royal Botanic Gardens. Received August 24, 1914.

39168. MEROPE ANGULATA (Willd.) Swingle. Rutaceæ.
(*Citrus angulatus* Willd.)

"A curious and as yet little known salt-resistant plant related to Citrus, of interest for trial as a stock. A small spiny tree bearing curious

39168 and 39169—Continued.

angular fruits and growing in the tidal swamps in southern Java; leaves coriaceous, thick, 3 to 5 by 1 to 1½ inches, borne on simple petioles; flowers white, 5 parted with 10 free stamens, pistil projecting beyond the stamens; fruits triangular, 1 to 2 inches long, in cross section approximately an equilateral triangle three-fourths to 1 inch on a side. This peculiar thick-leaved plant thrives in saline soils and is being tested as a stock for other citrus fruits by the U. S. Department of Agriculture." (*W. T. Swingle. In Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2038.*)

39169. RUBUS ELLIPTICUS Smith. Rosaceæ. **Raspberry.**

See S. P. I. No. 33342 for previous introduction.

39170 to 39172.

From Donga, Northern Nigeria, Africa. Presented by Rev. C. L. Whitman, Sudan United Mission, London, E. C., England. Received August 11, 1914. Quoted notes by Mr. Whitman.

39170. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Guinea corn.* It is usually planted in May and harvested in December."

39171. SESAMUM ORIENTALE L. Pedaliaceæ. **Sesame.**
(*Sesamum indicum* L.)

"*Benise seed.* This has a much shorter season than the guinea corn and is planted at various times. It is grown mostly by the Munshi tribe and is sold by them to the English trading firms. Only a very little is used for food."

39172. GOSSYPIUM sp. Malvaceæ. **Cotton.**

39173. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**

(*Persea gratissima* Gaertn. f.)

From Lumija, Chiapas, Mexico. Presented by Mrs. H. H. Markley. Received August 28, 1914.

"These are slightly pear shaped, 5 to 6 inches long and 10 inches in circumference at the largest part. The skin is very thin, tree a prolific bearer, growing 40 or more feet, symmetrical in shape, like a well-formed oak. Our temperature ranges from 70° to 100° F." (*Mrs. Markley.*)

39174. DIOSPYROS MACROPHYLLA Blume. Diospyraceæ.

Persimmon.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received August 31, 1914.

See S. P. I. No. 30521 for previous introduction.

"A tree 60 feet high, with dark terete branches. Leaves alternate, oval or oval oblong, acuminate at apex, rounded or subcordate at base, thinly coriaceous, nearly glabrescent below, with clear, slender, arching lateral veins, glabrous above, 3 to 10 inches long by 1½ to 4¾ inches wide; petioles one-sixth to one-fourth inch long. Male flowers axillary, paniculate, one-fourth inch long. pubescent; panicles many flowered, 1 to 1½ inches long, ultimate pedicels mostly short. Calyx shortly 3 to 5 fid, globose urceolate, three-sixteenths inch long. lobes deltoid; corolla silky outside, ovoid in bud, shortly five lobed, tube very

39174—Continued.

crass and hard; stamens 12, unequal, in pairs, glabrous. Female cymes few flowered, short, calyx four to five fid, hairy on both sides, accrescent in fruit; fruit tomentose, subglobose, 1 inch or more in diameter.

"Java, in mountainous places, Blume. Local name, *Kitjallung.*" (*Hiern, Monograph of the Ebenaceæ, p. 237, 1873.*)

39175. PRUNUS AVIUM L. Amygdalaceæ. **Cherry.**

From Rome, Italy. Presented by Dr. Gustav Eisen. Received August 24, 1914.

"*Marasca grossa di Firenze*, probably a seedling from *Marasca di Piedmonte*. Very large, dark brownish black, flesh very firm, very slightly adhering to the stone, which, however, separates readily. Subacid, sweet, and slightly astringent. Fine shipper. Suitable both for table and preserves. This cherry is larger than any I have seen in California, and, in my opinion, it is of exceptional qualities." (*Eisen.*)

39176. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. **Wampi.**
(*Clausena wampi* Oliver.)

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received August 22, 1914.

See S. P. I. Nos. 25546 and 31730 for previous introductions, and 38708 for description.

39177. CHLORIS VIRGATA Swartz. Poaceæ.
Australian Rhodes grass.

From Burringbar P. O., New South Wales. Presented by Mr. B. Harrison. Received August 26, 1914.

Var. *decora.*

"This grass is a rapid grower and a heavy yielder of nutritious fodder. It attains the height of 3 and 4 feet, is relished by stock, and will retain its verdure when other grasses are dried up, and if cut before seeding makes palatable hay. According to analysis, it is one of the richest grasses we possess, either imported or indigenous. It is only quite recently that it has come into prominence, principally through the favorable reports from Queensland, where it is said to have succeeded wonderfully in clay-pan, wind-swept, and sun-scorched country where other grasses were difficult to establish. It is, however, a native of this State also, having been identified in 1904, and it will probably succeed even with a lighter rainfall and under more adverse conditions than the imported species (*C. gayana* and *virgata*) which have a great reputation as drought resisters. The seed is very light, is carried some distance by the wind, and the grass spreads rapidly." (*Harrison.*)

39178. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ.
Bamboo.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden, at the request of Mr. J. L. Rock, Division of Forestry, Honolulu, Hawaii. Received August 27, 1914.

"It is a large bamboo that flowers sporadically and also gregariously. It occurs in the northeast Himalayas, Assam, the Khasi Hills, Sylhet, and

39178—Continued.

Upper Burma, and is distributed westward to the Sutlej, though beyond Nepal it is doubtfully indigenous. The culms run from 40 to as much as 80 feet in height and from 4 to 6 inches in diameter; the nodes are marked with root scars, the internodes are 12 to 20 inches in length and the walls half an inch thick. It is the common bamboo of Darjiling, the Duars, and Assam, and is universally employed for all kinds of basket and mat work. For building purposes it is not much esteemed. The young shoots are eaten as a vegetable, and in Assam a specially prepared substance known as *gass-tenga* is eaten as a luxury. The inner layer of the culm sheath is utilized for covering Burmese cigarettes. Referring to its straggling habit, Mr. Oliver says: 'When they have no trees to support them, the main stems bend over, forming impenetrable thickets, and the lateral branches ascend vertically, often forming shoots nearly as long as the main stems.' Mr. Manson alludes to the value of this species to the tea planters of the Darjiling district in shading their plantations from hot and violent winds." (*Watt, Commercial Products of India.*)

39179. Physalis peruviana L. Solanaceæ. **Cape-gooseberry.**

From Tolga via Cairns, Australia. Presented by Mr. J. A. Hamilton. Received August 25, 1914.

39180 and 39181. Rubus sp. Rosaceæ.

From Srinagar, Kashmir, India. Presented by the director, Department of Agriculture. Received August 26, 1914.

39182 and 39183. Madhuca spp. Sapotaceæ. **Mahwa.**

From Sibpur, Calcutta, India. Presented by the superintendent, Royal Botanic Gardens. Received August 24, 1914.

"It may be said that there are two great products of these trees [formerly known as *Bassia latifolia*, *B. longifolia*, and *B. malabarica*], the edible flowers and the oil-bearing seeds. A gum or gutta (the milky sap hardened) flows from incisions or abrasions on the stem. In some parts of the country ringing of the stem is practiced just on the setting of the fruits. When this is done the gum may be obtained in abundance. The bark is employed as a dye. The flowers, the oil, the spirits distilled from the flowers, and the bark are all used medicinally. Lastly the timber has some merit, but the trees, as a rule, are too valuable to allow their being killed for this purpose. The mahua [mahwa] shows its leaves from February to April. The cream-colored flowers appear in great clusters (of 30 to 50) near the ends of the branches, from March to April, and are soon followed by the young leaves. Preparatory to the harvest of flowers, the people clear the ground below the trees by burning the weeds and smoothing the soil. About March the flowers begin to come to maturity, and every morning just after sunrise the succulent corolla tubes fall in showers to the ground. This continues till the end of April, each tree yielding from 2 to 4 maunds (2½ to 5 bushels) of flowers, but usually the fall from a single tree is complete in about 7 to 10 days. A drying floor is prepared in a position central to a selected batch of trees. The ground is smoothed and beaten; on this the flowers as collected day by day are spread out to dry in the sun. In a few days they shrink in size, change in color to a reddish brown, and their peculiar sweet smell becomes more concentrated and the resemblance to that of mice more intense. But the mahua that is intended for sale is not

39182 and 39183—Continued.

dried to the same extent as that set apart for home consumption, and naturally so, since the loss in weight is considerable. But mahua is eaten extensively while fresh. In the dried form it is cooked and eaten along with rice and other grains or food materials. Before being eaten the dry corolla tubes are beaten with a stick to expel the stamens; the quantity required is then boiled for six hours or so and left to simmer until the water has been entirely evaporated and the mahua produced in a soft, juicy condition. Tamarind or sal (*Shorea robusta*) seeds and gram (chick-pea) are frequently eaten along with mahua. By the better classes it is fried with ghi (butter) or with mahua oil. It is extremely sweet, but the power to eat and digest this form of food is an acquired one, so that few Europeans are able to consume more than one flower without having disagreeable after effects. Sometimes the mahua is dried completely, reduced to a powder, and mixed with other articles of food. In that condition it is often baked into cakes. Sugar may also be prepared from the flowers, or they may be distilled and a wholesome spirit prepared, the chief objection to which is its peculiar penetrating smell of mice. Nicholls estimated that in the Central Provinces, 1,400,000 persons use mahua as a regular article of food, each person consuming one maund (1¼ bushels) per annum, an amount that would set free about 1½ maunds of grain, or about 30 per cent of the food necessities of the people in question. This, the lowest estimate, comes to one quarter of a million pounds sterling which the trees present annually to these Provinces." (*Watt, Commercial Products of India*, which see for discussion of the spirit manufacture and the use and manufacture of oil and butter from the seeds.)

39182. MADHUCA INDICA Gmelin.
(*Bassia latifolia* Roxb.)

Distribution.—A tree 50 feet tall found throughout central India at an altitude of 1,000 to 4,000 feet.

39183. MADHUCA LONGIFOLIA (L.) Coville.
(*Bassia longifolia* L.)

Distribution.—A tree 50 feet tall found in Malabar and in Ceylon.

39184. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanical Station. Received August 12, 1914.

39185 and 39186.

From Asmara, Eritrea, Africa. Presented by the director, Government of the colony of Eritrea, Government Office, Bureau of Colonization. Received August 24, 1914.

39185. JUNIPERUS PROCERA Hochst. Pinaceæ. **East African cedar.**

See S. P. I. Nos. 22775 and 27505 for previous introductions and description.

"A tree attaining in Eritrea from 20 to 25 meters in height and 1 meter in diameter, with oval, open head; bark cracked into long narrow plates, boughs cylindrical. Leaves scalelike, small, in four series, semi-oval or lengthened linear in the same plant. Flowers diœcious. Fruit globose ovoid or depressed globose, 5 to 7 mm. in diameter, bluish black and pruinose at maturity. Wood with yellowish white sapwood,

39185 and 39186—Continued.

very distinct from the heartwood, which is colored dark red, odor very strongly aromatic, characteristic. This wood, compact, with fine grain and susceptible of beautiful polish, is largely used for the manufacture of furniture, doorframes, for beams which resist decay, and for the manufacture of pencils. For this last use Schweinfurth has found it superior to the American species, but so far as I know no experiments have been made. . . . The indestructibility of this wood is such that it resists intact the dissolving action of the atmospheric agents, of insects, and of fungi, even after several years, since the tree has been cut, fallen, and left in the forest." (*Adriano Fiori, Boschi e Piante legnose del l'Eritrea.*)

39186. ROSA ABYSSINICA R. Br. Rosaceæ. **Rose.**

Distribution.—A white-flowered climbing rose, probably a form of the musk rose (*R. moschata* Miller), found in Abyssinia.

39187. RUBUS ROSAEFOLIUS Smith. Rosaceæ. **Raspberry.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received August 31, 1914.

"Seeds of our yellow-fruited Rubus. This variety is very scarce, probably because they are generally planted together with the common red variety with which it becomes cross-fertilized very easily, and the red predominates. I should therefore advise you to have these planted at a good distance from the red variety. The sowing of the yellow variety should be made in a rich soil and the plants cultivated in sheltered deep soil in the shade and well watered when in want of rain. The Rubus grows naturally by roots." (*Regnard.*)

39188 to 39190.

From Mayaguez, Porto Rico. Presented by Mr. W. E. Hess, plant propagator, Porto Rico Agricultural Experiment Station. Received August 29, 1914. Quoted notes by Mr. Hess.

39188. ACRISTA MONTICOLA Cook. Phœnicaceæ. **Palm.**

"*Palma de Sierra.* The mountain palm of Porto Rico covers many mountain slopes, especially in the eastern part of the island between 2,000 and 3,000 feet above sea level. It apparently thrives in this very humid, cool atmosphere and usually forms a clear stand. This palm greatly resembles *Areca baucrii*, grown to a great extent as a decorative palm in greenhouses, and young plants of Acrista are equally attractive. The bud of the mountain palm furnishes a good cabbage, but is not as sweet as those of the royal palm. Its black fruits are the size of a cherry and are relished by hogs."

39189. AERIA ATTENUATA Cook. Phœnicaceæ. **Llume palm.**

"The tallest of Porto Rico palms, reaching a height of 60 to 100 feet. Its foliage resembles the royal palm, but is shorter; the trunk never exceeds 6 to 8 inches in diameter. This palm is found only on limestone hills and usually feeds upon nothing but the humus collected in the cracks of these rocks. The large bunches of orange-red berries, which are the size of a small cherry, are very attractive and are fed to chickens and hogs."

39188 to 39190—Continued. (Quoted note by Mr. W. E. Hess.)

39190. CALATHEA LUTEA (Aubl.) G. F. W. Meyer. Marantaceæ. **Pampano.**

"This is one of our finest native foliage plants, attaining a height of 10 to 12 feet; its dark-green leaf blades are oblong, round at the apex, 4 to 5 feet long, and 2 to 3 feet wide. The under side is covered with a blue powder. The graceful curved veins give a characteristic appearance. This plant likes rich soil and plenty of moisture. Planted with bananas and other foliage plants near a pond it will rival in beauty any of its neighbors."

39191. SALIX sp. Salicaceæ. **Willow.**

From Semipalatinsk, Siberia. Presented by Prof. N. E. Hansen, South Dakota Agricultural Experiment Station, Brookings, S. Dak.

"Cuttings from small trees I found growing along the creek about 80 miles southwest of Semipalatinsk. This is a very dry region with 8 inches of annual rainfall and the temperature ranging from 50° F. below zero in winter to 106° above in summer. The remarkable characteristic about this willow is that the young shoots can be tied into knots without breaking, so it should be a good basket willow and good for tying bundles of nursery stock." (*Hansen.*)

39192. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Tripoli, Libya, Africa. Presented by Dr. F. Franceschi, Florence, Italy. Received September 3, 1914.

"A local variety, of which there is considerable export to Germany and England for beer factories; *Sxir* in Tripolino, *Orze* in Italiano." (*Franceschi.*)

39193. TRITICUM AESTIVUM L. Poaceæ. **Rivett's Red wheat.**
(*Triticum vulgare* Vill.)

From Coggeshall, Essex, England. Presented by John K. King & Sons. Received September 2, 1914.

"Pedigree stock of Rivett's Red wheat."

39194. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received August 24, 1914.

"(Sample 119b. Peking, China. June 22, 1914.) A very large-fruited variety of jujube, passing under the trade name of *Hsiang tsao*, or 'rattling jujube,' referring to the fact that the seeds rattle when shaken. Officially known as *Ta yuan tsao*, or 'big round jujube.' These jujubes come from the vicinity of Paihsiangchen, southwestern Shansi; they are a rare delicacy in Peking, selling for 30 cents (Mexican) per catty. They are eaten stewed with sugar or honey as a compote with rice and also boiled in rice, the same as western people use prunes. Soaking in water over night improves their delicacy of flavor. Scions sent under No. 1140 [S. P. I. No. 38243]." (*Meyer.*)

39195. PELARGONIUM sp. Geraniaceæ. **Geranium.**

From Genoa, Italy. Presented by Mr. John E. Jones, American consul general. Received August 21, 1914.

"Cuttings of a new Pelargonium." (*Jones.*)

39196. BALANITES MAUGHAMII Sprague. Zygophyllaceæ.

From Swaziland, Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association, Johannesburg, Transvaal, Union of South Africa. Received September 1, 1914.

"The seed is considered a valuable oil seed in those parts of the country in which it grows; that is to say, at altitudes below 1,500 feet in the subtropical belt, but with a comparatively low rainfall, probably not more than 15 inches, this coming during the summer season. The tree is a handsome one, though not very large, and should be useful in Florida." (*Davy.*)

"This species of Balanites is a native of Portuguese East Africa and may be found growing in the Lebombo Mountains, the Madanda Forest, and by the Umbeluzi and Rovuma Rivers. It is a tree which reaches a height of about 50 feet, with irregular-shaped bole up to 1⅔ feet in diameter. According to the report of the Imperial Institute, the fruits of *Balanites maughamii* seem unlikely to be of economic value for export, owing to the difficulty of removing the external sugary pulp and extracting the kernel from the thick, fibrous shell in which it is inclosed, but may, however, be of considerable importance for local consumption. The oil obtained from these kernels is clear, yellow, and liquid, possessing no marked smell or taste and having the following constants: Specific gravity, 0.916; saponification value, 198.5; iodine value, 100. The oil, if produced on a commercial scale, would probably realize the current price of refined cottonseed oil, but it is thought that the difficulties mentioned above would prevent its production on a large scale. Judging from the localities where this species is known to occur, it might be expected to do well in tropical and subtropical countries with a well-marked dry season. It would not be advisable to plant it on a large scale, however, until a satisfactory method of extracting the kernel has been devised." (*Kew Bulletin of Miscellaneous Information, 1913, No. 4, p. 136.*)

39197. AMARANTHUS GANGETICUS L. Amaranthaceæ. **Amaranth.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received September 4, 1914.

"Var. *tristis*. *Lal-sag*, a vegetable that we use here during our hot season; it should be sown in the summer, as it will not stand cold." (*Hartless.*)

39198. LUPINUS PILOSUS Murray. Fabaceæ. **Lupine.**

From Kyimbila, German East Africa. Presented by Mr. Ad. Stolz. Received August 31, 1914.

"African lupine growing wild on sandy soil." (*Stolz.*)

Distribution.—An annual lupine with digitate leaves and large blue flowers, found in the countries bordering on the Mediterranean from Greece to Palestine.

39199 to 39218. ORYZA SATIVA L. Poaceæ. **Rice.**

From Buitenzorg, Java. Presented by the Botanic Gardens. Received September 8, 1914.

39199. *Berod.*
39200. *Pelak.*
39201. *Pandan.*
39202. *Glindoeran.*
39203. *Kawoeng.*
39204. *Balidjembel.*
39205. *Dyalen.*
39206. *Laradjawi.*

39199 to 39218—Continued.

39207. *Mamas.*
39208. *Kowel.*
39209. *Menoer.*
39210. *Carolina.*
39211. *Baök.*
39212. *Sarilaia.*
39213. *Molok.*
39214. *Solo.*
39215. *Rogol.*
39216. *Walen.*
39217. *Osog.*
39218. *Gonde.*

39219 to 39222.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Cuban Agricultural Station, Santiago de las Vegas, Cuba. Received September 10, 1914. Quoted notes by Mr. Roig.

39219. COPERNICIA GLABRESCENS Wendland. Phœnicaceæ. **Hat palm.**

"Seeds of one of the Cuban hat palms called *yarey*, collected at San Juan de la Palma, Guantanamo, Oriente, Cuba. It is used mostly for thatching."

39220. PERESKIA PORTULACIFOLIA (L.) Haworth. Cactaceæ.

From Noraliche, Guantanamo, Oriente, Cuba.

39221. STERCULIA CARTHAGINENSIS Cavanilles. Sterculiaceæ.

Anacahuita.

"The most popular tree at Guantanamo. From the flowers a decoction is made against cough. The seeds are toasted and eaten like peanuts."

Distribution.—Tropical America, extending from southern Mexico to Brazil and naturalized in the West Indies.

39222. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

From Santiago de las Vegas, Cuba.

See S. P. I. Nos. 9007 and 31953 for previous introductions and description.

For an illustration of this handsome ornamental tree, see Plate VIII.

39223 to 39226. PASSIFLORA MALIFORMIS L. Passifloraceæ.

Passion fruit.

From Bogota, Colombia. Presented by Mr. F. L. Rockwood, clerk of the legation. Received September 11, 1914. Quoted notes by Mr. Rockwood.

"In my opinion, the yellow *kuruba* will be a valuable addition to table fruits in the United States, for it grows in a fresh, cool climate, and it is the main market fruit of that class here. The red *kuruba* is not common, and the families that have it think it is the best, but it is not a prolific bearer and not so hardy. The indio [S. P. I. No. 38882], the yellow, and the red are all more or less of one family. A climbing vine, it covers walls, outhouses, and small buildings with evergreen, continually bearing fruit. The flowers are very handsome, and it is thought to be more or less a passion flower and fruit. The surroundings and conditions have turned it into a market fruit."

39223. "Yellow kuruba."

39224. "Native yellow kuruba of the finest quality."

39225. "The red kuruba is the most nearly perfect in both fruit and flower and is difficult to obtain. It is highly prized by families for decoration and table use and is not to be found on the market."

69226. "Red kuruba." See S. P. I. No. 39225.

39927. TRITICUM DICOCCUM Schrank. Poaceæ. **Emmer.**

From Bombay, India. Presented by Mr. Henry D. Baker, American consul, who secured it from Mr. Frank Harrison, Bombay. Received September 11, 1914.

"Seeds of wild Kathiawar wheat, which is supposed to be the original parent of all wheats in the world, from the district of Kathiawar, on the west coast of India, north of Bombay, and in the Bombay Presidency." (*Baker.*)

"This wheat grows wild in Kathiawar, a very dry tract on the west coast of India, north of Bombay. It is said that all wheats in existence can be traced back to this stock and that it spread from India westward via Chaldea (Mesopotamia) and Egypt thousands of years ago. Natives who eat this wheat declare it is more palatable and has a better food value than any of the modern varieties grown in India. It has great drought-resisting properties and should do well in the arid tracts of the Southern States of America. Natives collect this wheat in the jungle and separate it from the straw by treading, i. e. cattle are made to walk over it in a circle until the grain is separated from the straw. They then pass the grain through hand querns, in order to get rid of the chaff, or husk, which is very thick. We find, however, that a rice huller manufactured by an American firm will hull it in a most satisfactory manner." (*Harrison.*)

"A variety of white spring emmer, such as is commonly grown in our Northwestern States. It is interesting, however, to have the opinion of the natives concerning it." (*M. A. Carleton.*)

39228 to 39260. ZEA MAYS L. Poaceæ. **Corn.**

From Copacabana, Peru. Presented by Capt. James W. Tynan, Puno, Peru. Received September 15, 1914.

39228. Dark red.
39229. Red.
39230. Yellow.
39231. Yellow.
39232. Red and white banded.
39233. Red and white variegated.
39234. Yellow.
39235. White.
39236. Orange endosperm.
39237. Maroon and white banded.
39238. Yellow.
39239. Cream.
39240. Mottled yellow and black.
39241. Blue and white aleurone.
39242. Cream.
39243. Red and white variegated.
39244. Light variegated.
39245. Dark red and yellow variegated.
39246. White.
39247. Maroon and white banded.
39248. Faint yellow.
39249. Yellow and gray.
39250. Red and white banded.
39251. Yellow.
39252. Red.
39253. Maroon.
39254. Orange and yellow.
39255. Red pericarp.
39256. Cream.
39257. Light yellow.
39258. Red and yellow variegated.
39259. Dark yellow.
39260. Cream.

39261. PHYLLANTHUS ACIDA (L.) Skeels. Euphorbiaceæ.
(*Phyllanthus distichus* Muell. Arg.)

From Guayaquil, Ecuador. Presented by Mr. Frederic W. Goding, American consul general. Received September 17, 1914.

39261—Continued.

"*Grosella.* Grows on a tree 13 feet high and 4 or 5 inches in diameter, the branches beginning about 6 feet from the ground. The fruit grows from the branches direct, in small clusters, entirely separated from the leaf branch. The berry is prized very highly for jams and jellies." (*Goding.*)

For illustrations of the habit, fruit, and foliage of this tree as grown in Florida, see Plates IX and X.

39262. SACCHARUM OFFICINARUM × CILIARE. Poaceæ. **Sugar cane.**

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, superintendent, Harvard Botanical Station.

"Cuttings of a hybrid cane, the result of a cross between our field sugar cane *Saccharum officinarum* L. ♀ and *Saccharum ciliare* ♂ (S. P. I. No. 17991.) In carrying on my hand hybridizing work (1909) among the canes I found *S. ciliare* in flower and used the pollen on one of my seedling varieties of *S. officinarum*, which resulted in the present cross. To be sure, it has no commercial value, as it contains but little sugar, but it may be of interest to know that the species will cross-fertilize." (*Grey.*)

39263. ALLIUM CEPA L. Liliaceæ. **Onion.**

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul. Received September 19, 1914.

39264 to 39286.

From Buitenzorg, Java. Presented by Mr. T. E. Van der Stok, Chief of the Station for Selection of Annual Crops, Botanic Garden. Received September 8, 1914. Quoted notes by Mr. Van der Stok.

39264 to 39282. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"Generally growing in the mountains on a very small scale."

39264.	*Gandroeng keupeul.*	39273.	*Gańdroeng goeweup.*
39265.	*Tjantel.*	39274.	*Gandroeng.*
39266.	*Tjantel oetjir.*	39275.	*Gandroeng sekoel.*
39267.	*Gandroeng.*	39276.	*Tjantel.*
39268.	*Gandroeng tarigoe* or *Padimekah.*	39277.	*Gandroeng tilinggi.*
39269.	*Gandroeng djebrag.*	39278.	*Gandroeng boerajot.*
39270.	*Gandroeng tjinde.*	39279.	*Gandroeng beureum.*
39271.	*Tjantel item.*	39280.	*Gandroeng degem.*
39272.	*Tjantel tjondro.*	39281.	*Gandroeng djabag.*
		39282.	*Gandroeng koempaj beureum.*

39283 to 39285. CHAETOCHLOA ITALICA (L.) Scribner. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"Generally growing in the mountains on a very small scale."

39283. *Koenjit boentoet koetjing.*

39284. *Djawawoet.* 39285. *Koenjit ramo koetjing.*

39264 to 39286—Continued. (Quoted note by Mr. T. E. Van der Stok.)

39286. COIX LACRYMA-JOBI L. Poaceæ. **Job's-tears.**

"*Handjeli.* Generally growing in the mountains on a very small scale."

39287 to 39293.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Cuban Experiment Station. Received September 22, 1914.

39287 to 39290. COPERNICIA spp. Phœnicaceæ. **Palm.**

39287. COPERNICIA MACROGLOSSA Wendland.

Jata.

39288. COPERNICIA HOSPITA Martius.

Guano hediondo.

39289. COPERNICIA GLABRESCENS Wendland. **Hat palm.**

Yarey. See S. P. I. No. 39219 for previous introduction.

39290. COPERNICIA HOSPITA Martius.

Guano espinoso.

39291. PAUROTIS WRIGHTII (Gris. and Wendl.) Britton.
(*Copernicia wrightii* Gris. and Wendl.)

Miraguano espinoso.

"*Paurotis* is a monotypic genus, inhabiting swamps and hammocks along the Chockoloskee River in southwestern Florida and Andros Island, Bahamas (where it is called *Spanish-top*), and it is frequent in Cuba." (*Britton, North American Trees, p. 141, 1908.*)

39292. INODES BLACKBURNIANA (Glazebrook) Cook.

Palma cana.

39293. COCCOTHRINAX MIRAGUAMA (H. B. K.) Beccari.

Yuraguana.

39294. AMARANTHUS VIRIDIS L. Amaranthaceæ.

From Chosenholme, Wonsen, Chosen (Korea). Presented by Mr. C. F. S. Bilbrough. Received September 14, 1914.

"*Byam,* used as a vegetable in Burma, boiled like spinach. I do not know if this is used or known in Europe." (*Bilbrough.*)

39295. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.
(*Prunus microphylla* Hemsl.)

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Mr. C. A. Purpus. Received September 15, 1914.

"From a shrub loaded with ripe fruits. I have opened several and found the kernels sound as an apple, which is a great exception." (*Purpus.*)

39296. CEREUS sp. Cactaceæ.

Pitahaya.

From Guatemala City, Guatemala. Presented by Mr. S. Billow. Plants received September 25, 1914.

"The fruiting season is now over." (*Billow.*)

TREE OF PHYLLANTHUS ACIDA (L.) SKEELS, GROWING IN FLORIDA. (SEE S. P. I. NO. 39261.)

This tree stands on the place of C. B. Douglas at Miami, Fla. The clustering of the shoots at the end of the branches gives it the appearance of having pinnately compound leaves. The leaves are in reality simple and alternate. The tree is an attractive ornamental in Florida, aside from the fact that it produces large quantities of peculiarly acid fruits. (Photographed by Wilson Popenoe, June 23, 1915; P16366FS.)

FRUIT AND FOLIAGE OF PHYLLANTHUS ACIDA (L.) SKEELS, AS GROWN IN FLORIDA. (SEE S. P. I. No. 39261.)

A close view of the fruit on the tree shown in Plate IX. The fruit is pale green, round, ribbed, and very acid, with a single hard seed in the center. When cooked with sugar this fruit is said make an excellent preserve. Its prodigious bearing capacity would seem to entitle it to more serious attention than it appears to have been given in Florida. This fruit is also known as *Phyllanthus distichus* and *Cicca disticha*. (Photographed by Wilson Popenoe, Miami, Fla., June 23, 1915; P16367FS.)

39297. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Bogota, Colombia. Presented by Capt. H. R. Lemly, U. S. Army, retired. Received September 19, 1914.

39298 to 39302.

From Salisbury, Rhodesia. Presented by Mr. H. Godfrey Mundy, Government Agriculturist and Botanist, Department of Agriculture. Received September 21, 1914. Quoted notes by Mr. Mundy, except as otherwise indicated.

39298. SECURIDACA LONGIPEDUNCULATA Fresenius. Polygalaceæ.

"The Rhodesian violet tree."

"A much-branched shrub 8 to 10 feet high with violet flowers in terminal racemes, found in Abyssinia, the Mozambique district, and in Upper and Lower Guinea. The bark of this plant affords the *Buaze* fiber of Zambesiland." (*Oliver, Flora of Tropical Africa, vol. 1, p. 134, 1868.*)

39299. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"Grown by the natives here."

39300. BOLUSANTHUS SPECIOSUS (Bolus) Harms. Fabaceæ.
(*Lonchocarpus speciosus* Bolus.) **Wistaria tree.**

See S. P. I. No. 21808 for previous introduction.

39301. CLITORIA TERNATEA L. Fabaceæ.

"A blue-flowering creeper, indigenous to India."

39302. THUNBERGIA sp. Acanthaceæ.

"A very handsome blue-flowering native Thunbergia, also a creeper."

39303. NICOTIANA TABACUM L. Solanaceæ. **Tobacco.**

From Guatemala City, Guatemala. Presented by Mr. S. Billow. Received September 17, 1914.

"A short time ago I noticed several plants growing in a little park near this city. I secured some of the seed. I questioned the gardener in charge about how the plants came there and he said they were volunteers; one of the laborers stated he used the leaf for smoking, and it was very strong. As far as I can tell there was no plant disease, but I noticed a large number of green insects which attacked the leaves." (*Billow.*)

39304 to 39308.

From Ogbomosho, Nigeria. Presented by Rev. George Green, M. D., Southern Baptist Mission. Received September 14, 1914.

39304. PHASEOLUS sp. Fabaceæ.

"Bean, grows on vines, native of Nigeria, West Africa." (*Green.*)

39305. PHASEOLUS LUNATUS L. Fabaceæ. **Butter bean.**
Native (?).

39306. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**
Native black-eye pea.

39307 and 39308. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
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INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1914.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1914 (NO. 41; NOS. 39309 TO 39681).

INTRODUCTORY STATEMENT.

Although a small one, this inventory contains descriptions of some very interesting new material.

A low-growing creeping legume (*Dolichos hosei*, the Sarawak bean), which keeps down the weeds successfully in rubber plantations in the Malay States and should be of value in citrus orchards in Florida (S. P. I. No. 39335), and a wild prostrate form of alfalfa from the mountains between Hotien, Honan, and Luanfu, Shansi, China, will interest those experimenting with forage and cover crops (S. P. I. No. 39426).

The *Rosa odorata gigantea* (S. P. I. No. 39593), a giant among the roses from the Himalayas, with white flowers 6 inches across and a more rampant growth than the Cherokee rose and which has already shown that it will cross on other roses, ought to open the way for a new race of climbing roses in the South.

Eight varieties of sweet potato from the Cuba Experiment Station (S. P. I. Nos. 39610 to 39617), among them a prize winner of the Camaguey exhibition, will be wanted for trial by southern stations, and the wild tomato of Funchal (S. P. I. No. 39362), introduced by Mr. Gable from the driest rocky locations on the island of Madeira, where it grows wild and is believed to be from the original stock from which the cultivated tomato has sprung, will probably interest tomato breeders because of its drought-resistant qualities.

An unusually large collection of Chinese barleys, 38 varieties (S. P. I. Nos. 39494 to 39531), presented by the special envoy for foreign affairs, through the United States consul general at Shanghai, may yield good new varieties for some sections of this country.

NOTE.—This bulletin is a record of new or little-known seeds or plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

The chingma, the so-called China jute or Tientsin fiber (S. P. I. No. 39361), which yields a harsher and stronger fiber than the Indian jute and is used for carpet making, has been introduced from Ichang, China, and, if improved methods for extracting the fiber can be devised, may prove a profitable crop in America.

The attempt to save from extinction the last survivor of a species of tree closely related to our cultivated cotton, in order that hybrids with it may be made, has a great deal more than a sentimental interest. Seeds from the dying tree of this *Kokia drynarioides* (S. P. I. No. 39354) from Molokai, have been secured by Mr. Rock, of Hawaii.

The doorn boom of the South Africa veldt (*Acacia horrida*), the most widely distributed of all South African trees and the characteristic landscape tree in the pictures of big-game hunting in South Africa, appears to be a promising hedge plant and windbreak for trial in Texas (S. P. I. No. 39355).

The most beautiful of the flowering trees of Java (*Spathodea campanulata*), introduced from Africa into that island, which is in bloom there almost throughout the whole year, was sent in by Dr. B. T. Galloway several years ago and has flowered in southern Florida, and new importations of seed have consequently been made (S. P. I. No. 39415). To Mr. W. M. Matheson will go the honor of the first introduction of this tree into Florida, for he brought it in earlier from Jamaica.

The success of various species of Tamarix as low windbreaks in Texas has made it advisable to get together the other species of this genus, and two of these have been imported from the desert of Farab, Bokhara, Turkestan (S. P. I. Nos. 39628 and 39629).

The accounts of the Mahwa tree (*Madhuca indica*, S. P. I. No. 39325), the fleshy flowers of which produce food annually in India worth over a million dollars, have made it seem desirable to introduce it into Florida and Porto Rico, even though these dried flowers have an unpleasant odor of mice and appear to be somewhat indigestible. The value of this tree seems truly remarkable, and it deserves investigation from an American point of view.

The rapid growth of avocado groves in California and Florida and the growing realization that a fruit which produces over 29 percent of fat is more than a mere table delicacy make the dissemination of the Guatemalan and Mexican hard-shelled spring and winter ripening seedlings of remarkable shipping qualities, which have in recent years been grown in California, of much more than passing interest (S. P. I. Nos. 39369 to 39375).

American Consul Charles K. Moser's discovery of a delicious Ceylonese mango almost as large as a coconut, with a striking red blush and almost no fiber, shows that all of the most desirable types

of the mango varieties of India evidently can not be secured through correspondence (S. P. I. No. 39485).

The popularity of the Paraguayan fruit *Feijoa sellowiana* and its unexpected hardiness in the South make a large-fruited seedling of especial importance at this time (S. P. I. No. 39555).

The rosy fleshed anona called Ilama (*Annona diversifolia*), considered one of the best of this important class of fruits (S. P. I. No. 39567), and the *Annona purpurea* (S. P. I. No. 39358), a new, large, aromatic-fruited species, add two important fruit plants to the subtropical collection.

The Chinese wampi (*Claucena lansium*) has shown that it will grown in Florida, and either its pale yellow rough-skinned fruits of aromatic flavor or its ability as a stock to carry the grapefruit may make it of value (S. P. I. No. 39568).

The tropical ciruelas ,*Spondias lutea* (S. P. I. No. 39563), which are popular in the markets of Bogota three months of the year, should, if one can judge by the success of other species of the same genus there, thrive well in Florida.

A study seems not yet to have been made of the varieties of coconut and their comparative value for the different purposes to which coconuts are put, and the introduction by Mr. H. Pittier, from Punta Burica, Panama, of a rare variety rich in oil (S. P. I. No. 39356) emphasizes the need of a thorough study of this immensely valuable food plant.

The possible use of new stocks for the pear and an investigation of the origin of the blight-proof Kieffer and LeConte pears will make necessary close comparisons of the different Chinese species, and pear breeders will want plants coming from the original trees of *Pyrus betulaefolia* which were sent to Kew and the Arnold Arboretum by Dr. Bretschneider in 1882 (S. P. I. Nos. 39547 and 39548); also plants of *Pyrus bretschneideri* (S. P. I. No. 39538), which, at the arboretum, in addition to being a remarkable ornamental, yields yellow globose, juicy fruits of fair quality, from which it is thought by Prof. Sargent the best of the Chinese cultivated pears have been derived; and *Pyrus ovoidea* (S. P. I. No. 39541), which is possibly the parent of the Kieffer and has large, abundant flowers and foliage that colors scarlet in autumn; and particularly *Pyrus phaeocarpa* (S. P. I. No. 39540), with pyriform fruits, which has never been attacked by pear blight, although a large tree of it has been standing in the arboretum for many years, exposed to infection.

The woolly aphis is a serious pest of apple orchards in Chile, but four immune varieties of apple have been found there and extensively propagated by a large nursery firm at Santiago. They are deserving of trial in this country (S. P. I. Nos. 39320 to 39323).

Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture, has discovered in the Shansi Province of China a true wild apricot, the kernels of which are pickled in brine and eaten as appetizers by the natives (S. P. I. No. 39439), and in the mountains south of Sianfu, Shensi Province (S. P. I. No. 39428), and again in Chaoyu, Shansi Province (S. P. I. No. 39544), a small, sour, but freestone wild peach, which may be of decided importance to peach breeders. *Prinsepia uniflora*, which he found near Fucheng, a spiny shrub, very decorative in May, and bearing fruits which resemble cherries, being dark red in color, quite juicy, and sour, may add a useful hardy fruiting shrub to the gardens of this country (S. P. I. No. 39432). A Prinsepia introduced by Wilson has proved hardy in the Arnold Arboretum.

Chinese place and plant names in this inventory have been brought, as far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., November 25, 1916.

INVENTORY.

39309. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Punjab, India. Presented by Mr. A. H. Brydges, Loomis, Cal. Received at the Plant Introduction Field Station, Chico, Cal.

"Seeds from the village of Aliwal, District of Jhalandar, Punjab, India. They are the earliest fruiting varieties in that locality, ripening in August." (*Brydges.*)

39310 to 39313. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Hamburg, Germany. Presented by the Botanische Staats-Institut.

39310. From German East Africa.

39311. From Kamerun.

39312. From Togo.

39313. From German East Africa.

39314. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

From Mbale Sana, Lumbwa, British East Africa. Presented by Mrs. E. L. Smith. Received October 3, 1914.

"*Njai*, a Kikuyu bean much liked and valued by the natives." (*Mrs. Smith.*)

39315 to 39317.

From Boulder, Colo. Presented by Mr. Theo. D. A. Cockerell. Received October 1, 1914. Quoted notes by Mr. Cockerell, except as otherwise indicated.

39315 and 39316. PENTSTEMON HUMILIS Nutt. Scrophulariaceæ.

"From Flagstaff Hill." Low-branching perennial occurring in the Rocky Mountains and westward. It is well suited for the hardy border, but does not usually grow higher than 6 inches. The flowers, which are one-half inch in length, are rather narrow and of a deep-blue color, sometimes ranging to white. It grows well in fairly good soil. The flower stalks should be supported by light stakes to keep them from being blown about by the winds or borne down by heavy waterings. (Adapted from *Bailey, Cyclopedia of American Horticulture*, and *McLaren, Gardening in California.*)

39315. "A very beautiful variation with bright blue flowers, a different shade of color from the normal. It may have to be taken to the F^2 generation to show its true colors."

39316. "A variety with very pale flowers. Probably will not appear with pale color until the F^3 generation.

39315 to 39317—Con. (Quoted notes by Mr. T. D. A. Cockerell.)

39317. ROSA ANGUSTIARUM Cockerell. Rosaceæ. **Rose.**

"From Wood Mountain, Colo., September, 1914 (D. M. Andrews). Published as *Rosa pratincola angustiarum* in Daniels' Flora of Boulder, Colo., and Vicinity (University of Missouri Studies, 1911, p. 148). I now consider it a distinct species. The fruits vary in shape on the same branch."

39318 and 39319.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received October 1, 1914.

39318. ANGOPHORA LANCEOLATA Cavanilles. Myrtaceæ. **Apple myrtle.**

"An evergreen tree found in New South Wales and Queensland, 24 to 36 inches in diameter, 70 to 80 feet in height. The tree produces a kino or gum which, when freshly exuded, has (like other Angophora and a few Eucalyptus kinos) a smell like sour wine, but more disagreeable. Even when quite freshly exuded it is exceedingly brittle. It has a bright fracture, and is of a ruby color, with a tinge of brown. Color of powder orange-brown. Water acts but slowly upon it, forming a pale reddish brown solution, and leaving abundance of sediment. Timber strong, heavy, subject to gum veins; used for naves of wheels, slabs, rough building, and fuel." (*Maiden, Useful Native Plants of Australia, pp. 236 and 376.*)

39319. CHENOPODIUM sp. Chenopodiaceæ.

"Said to grow to a height of 11 feet in arid country; a splendid fodder for dairy stock." (*Harrison.*)

39320 to 39323. MALUS SYLVESTRIS Miller. Malaceæ. **Apple.**

(*Pyrus malus* L.)

From Santiago, Chile. Presented by Señor Salvador Izquierdo.

"These scions are of apple varieties which are free from the woolly aphis and are cultivated with much success in Santa Ines." (*Izquierdo.*)

39320. No. 993. *Gobernador Civit.*

39321. No. 991. *Esquisita de Santa Ines.*

39322. No. 994. *Huidobro.*

39323. No. 984. *Admirable de Otoño.*

39324 and 39325.

From Allahabad, India. Presented by Mr. William Bembower, Ewing Christian College. Received October 8, 1914.

39324. DIOSPYROS NIGRICANS Wallich. Diospyraceæ.

"A tree 50 feet high, with many lax cinereous, glabrescent branches; young shoots and petioles minutely puberulous. Leaves oval oblong, much acuminate at apex, somewhat narrowed at base, alternate, turning black when dry, firmly membranous, glabrous, except on midrib which is puberulous and depressed on the upper surface; lateral veins and net veins delicate, not conspicuous above; 3 to 5 inches long by 1 to 1¾ inches wide; petioles one-tenth to one-seventh inch long.

"Male plants. Flowers in few flowered (3 to 6) short axillary puberulous cymes, subsessile, one-quarter to one-third inch long, bracts small, imbricated. Calyx with scattered short ferruginous hairs outside, shortly 4-lobed. Corolla with few scattered short hairs outside,

39324 and 39325—Continued.

deeply (two-thirds) lobed, slender; lobes reflexed at apex. Stamens 32 in one case, very unequal, many minute, glabrous.

"Female plants. Fruit glabrous, ovoid or globose, pointed at apex, about two-thirds inch long, 4-celled, 4-seeded, solitary. Fruiting calyx 4-partite, with scattered ferruginous hairs outside, nearly glabrous inside, with oval, flat, spreading or reflexed lobes, one-third inch long. Seeds oblong, two-thirds inch long; albumen not ruminated, embryo nearly as long as the albumen. Fruiting peduncles shortly hispid, one-fifth inch long, patent, unilateral, bearing 2 small bracts." (*Hiern, Monograph of the Ebenaceæ.*)

39325. MADHUCA INDICA Gmelin. Sapotaceæ. **Mahwa.**
(*Bassia latifolia* Roxb.)

"I hope you will get a few *Mahwa* plants, though I know the percentage of vitality is very small in these seeds." (*Bembower.*)

For previous introduction and description, see S. P. I. No. 39182.

39326 to 39329. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Strathmore, North Quay, Brisbane, Queensland, Australia. Presented by Mr. Arthur Temple Clerk. Plants received at the Plant Introduction Field Station, Chico, Cal.

39326. OPUNTIA VULGARIS Miller.

39327. OPUNTIA TOMENTOSA Salm-Dyck.

39328. OPUNTIA BRASILIENSIS (Willd.) Haworth.

39329. OPUNTIA STRICTA Haworth.

39330. ATALANTIA MONOPHYLLA DC. Rutaceæ.

From Sibpur, near Calcutta, India. Presented by the Royal Botanic Garden. Received October 17, 1914.

See S. P. I. No. 38511 for previous introduction and description.

39331. GLIRICIDIA SEPIUM (Jacq.) Kunth. Fabaceæ.

(*Gliricidia maculata* H. B. K.)

From Manila, Philippine Islands. Presented by Mr. D. LeRoy Topping, Bureau of the Treasury, Manila. Received October 8, 1914.

"*Madre de cacao.* I used it for a house decoration and had stalks of it fully 10 feet long that were a mass of bloom, and everybody exclaimed, 'Quite like a bit of Japan.' The plant is inclined to sprawl, and if wanted purely for ornamental purposes it would be well to prune it." (*Topping.*)

39332 to 39334.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, director, Escola Agricola de Lavras. Received October 17, 1914. Quoted notes by Mr. Hunnicutt, except as otherwise indicated.

39332. PANICUM BARBINODE Trinius. Poaceæ. **Carib grass.**

Capim d'Angola.

See S. P. I. No. 37998 for previous introduction and description.

39333. TIBOUCHINA STENOCARPA (DC.) Cogn. Melastomaceæ.

"Seeds of a wild flowering shrub, commonly called *Quaresma* or *Lent*, as it blooms at Lent. It has a beautiful purple flower, and the blooming

39332 to 39334—Con. (Quoted notes by Mr. B. H. Hunnicutt.)

season covers a number of months. It grows well on the poorest, driest grounds we have and blooms during the dry season. I think it has been cultivated in some gardens in Brazil, although I never have seen it. Ornamental only."

39334. STRYPHNODENDRON BARBATIMAM Mart. Mimosaceæ.

Barbatimão.

"*Barbatimão.* The bark of this is used for tanning purposes."

"Total dissolved solids, 31.6 per cent; solids soluble in cold water, 28.6 per cent; nontannins, 6.7 per cent; tannins, 20.1 per cent." (Letter from *Bureau of Chemistry, November 21, 1914.*)

39335. DOLICHOS HOSEI Craib. Fabaceæ. **Sarawak bean.**

From Kuala Lumpur, Malay States. Presented by the director, Department of Agriculture. Received October 16, 1914.

Seed from plants sent by Mr. Hose to Kuala Lumpur Experimental Plantation.

"I have found a small creeping bean of the Vigna family which is indigenous to Sarawak, but as yet I have been unable to ascertain its name; and I think it is just possible that it has never been reported from Sarawak. This bean appears to fulfil all that is required (a low-growing leguminous plant which can be dug into the soil and reproduce itself in time to check the growth of weeds and grows readily from cuttings), but seeds are very difficult to procure. The flower is yellow and the leaf a rich light green; the roots do not penetrate the ground more than 1 inch; the plant forms a thick level mass about 6 inches thick on the ground; it will grow on almost any soil, but for preference a light soil, and in six months after planting should prevent all wash if planted 3 feet apart. I have been planting this bean with rubber for three years and have now 200 acres planted with it, and it has proved itself in every way a success." (*Hose, in Agricultural Bulletin of the Federated Malay States, p. 276.*)

39336. CHORISIA SPECIOSA St. Hil. Bombacaceæ. **Samuu.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received October 15, 1914.

"Seeds of the *Samuu*, as called here. As to its beauty as an ornamental plant, I have every confidence in its making good. I wish to call your attention to one difference this variety has in comparison with the kind described in the department bulletins, which is that this tree does not need a humid atmosphere, and it will stand a very decided nip from frost, though to what degree I have not registered." (*Mead.*)

39337 to 39340. MANIHOT spp. Euphorbiaceæ. **Maniçoba.**

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received October 5, 1914. Quoted notes by Dr. Argollo.

"The good name that *Jequie* rubber had was on account of being prepared in sheets and pure, because the *Manihot dichotoma* is tapped on the bark in *porangos* (tins) like *Hevea*, so such rubber is clean from impurities and is easily prepared in thin sheets of nice appearance. *Manihot heptaphylla* (Rio Sao Francisco zone) and *M. piauhyensis* (State of Piauhy) being tapped near the roots, if not tapped carefully, give rubber that has a large proportion of sand

39337 to 39340—Con. (Quoted notes by Dr. V. A. Argollo.)

and clay. As to quality, the *Jequie* is the worst, for it has resins and less elasticity. Growers who planted *M. dichotoma* succeeded badly because the growth of trees is extraordinarily variable. Seedlings from the same tree show an extraordinary variability of leaves and growth. *M. dichotoma* requires at least 6 years, as a rule, before tapping. The best variety for plantations is *M. piauhyensis*, for it gives the best rubber, and can be tapped at 3 years (even at 2 years under good conditions). With low prices of maniçoba rubber, maniçoba can only give profits if labor is very cheap, not exceeding 0.3 milreis (16 cents) per day. Maniçobas will not stand frost. (I have seen some severely injured in Sao Paulo by slight frosts in coffee districts.) Maniçoba requires a rainy season in summer. The *M. heptaphylla* and *M. dichotoma* are found in parts of the State of Bahia on the other side of the chains of mountains that divide the State in two climates. Between the mountains and the sea the rains are during winter, and on the other side, from the mountains to the Rio Sao Francisco, the rainfall is in summer. Maniçoba grows in the second zone if planted, but does not give much rubber nor good quality, as Villa Nova plantations show, although the trees have the best appearance. (Villa Nova is on the mountain that divides the climatic zones of the State. In the mountains you have rains in summer and *neblinas* (fog rain) in winter.) In the maniçoba districts there are heavy rains during summer for 4 to 6 months; such rains may last for 10 days, day and night. There are no rains during the dry season, and from time to time there happens a dry year and summer rains fail (about once in 10 years). In our State people who have maniçoba forests or plantations are investing in cotton, because the low price of rubber does not give enough profits to pay for the tapping of trees. Maniçoba will not stand stagnant water. I am going to gather for you seeds of the three varieties. I do not know whether any of them can be successfully cultivated in the States, but if you have the proper climatic conditions—rains in summer, no frosts, and soil from decomposed granite (red clayey sandy or sandy clayey)—I think you will prefer the small *M. piauhyensis*."

39337. MANIHOT GLAZIOVII Muell. Arg.

"*Maniçoba Ceara.* These small seeds with dark colorations are quite different from other varieties. This is the commonly known maniçoba for the first time tapped. It gives a good rubber and is tapped on the bark that is naturally exfoliated, which makes the tapping and collecting of clean rubber difficult."

39338. MANIHOT DICHOTOMA Ule.

"*Maniçoba Jequie.* Seeds long, of which the largest are quite typical."

39339. MANIHOT PIAUHYENSIS Ule.

"*Maniçoba Piauhy.*"

39340. MANIHOT HEPTAPHYLLA Ule.

"*Maniçoba Sao Francisco;* round seeds."

39341. (Undetermined.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. Ad. Tonduz, Department of Agriculture, San Jose. Received October 21, 1914.

39342. VERSCHAFFELTIA SPLENDIDA Wendl. Phœnicaceæ. **Palm.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received October 19, 1914.

See S. P. I. No. 34083 for previous introduction.

39343 to 39351.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. at the request of Mr. C. V. Piper, of the Bureau of Plant Industry. Received at the seed warehouse on October 20, 1914. Quoted notes by Mr. J. M. Westgate.

39343. ONOBRYCHIS VULGARIS Hill. Fabaceæ. **Common sainfoin.** (*Onobrychis viciaefolia* Scop.)

"This seed was obtained for trial on sandstone hills. It is a deep-rooted perennial forage crop which is to be tried in humid and subhumid sections."

39344. MEDICAGO LUPULINA L. Fabaceæ. **Yellow trefoil.**

"This seed was obtained for experiments with clover substitutes and as a pasture plant in the Southern States and northward."

39345. ORNITHOPUS SATIVUS Brot. Fabaceæ. **Serradella.**

"This seed was obtained for experiments with clover substitutes and as a pasture constituent in humid and subhumid climates."

39346. ULEX EUROPAEUS L. Fabaceæ. **Gorse or whin.**

"This seed was obtained for trial as a browsing shrub in limestone sections in humid and subhumid parts of the country."

39347 to 39349. LUPINUS spp. Fabaceæ. **Lupine.**

"This seed was obtained for use as a substitute for crimson clover in green-manuring experiments in the Northern States."

39347. LUPINUS ALBUS L. **White lupine.**

39348. LUPINUS ANGUSTIFOLIUS L. **Blue lupine.**

39349. LUPINUS LUTEUS L. **Yellow lupine.**

39350. CYTISUS SCOPARIUS (L.) Link. Fabaceæ. **Scotch broom.**

"This seed was obtained for trial as a browsing shrub in limestone sections in humid and subhumid parts of the country."

39351. SPERGULA ARVENSIS L. Silenaceæ. **Giant spurry.**

"This seed was obtained for trial as a green-manure crop and a forage crop."

39352. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Bogota, Colombia. Presented by Capt. H. R. Lemly, United States Army, retired. Received October 17, 1914.

"Seeds from a particularly fine specimen." (*Lemly.*)

"The principal fruit cultivated by the aboriginal inhabitants of western South America. Endemic in the Andes, and subtropical rather than tropical in its natural habitat. Fruit with an abundance of slightly acidulous sweet juicy pulp, with a flavor somewhat like that of a pineapple. Recommended for planting in southern California in the foothills near the coast." (*W. E. Safford.*)

39353. COFFEA AMARA F. F. Bruijning. Rubiaceæ. **Coffee.**

From Tamatave, Madagascar. Presented by Mr. James G. Carter, American consul. Received October 12, 1914.

"*Mautsaka*, the so-called caffein-free coffee grown in the south of Madagascar." (*Carter.*)

"This coffee was collected in the Fort Dauphin district. It occurs frequently in the southeastern portion of Madagascar, grows from 5 to 5½ meters high, and resembles the ordinary coffee very much, although the leaves are smaller. The ripe fruit assumes a yellowish color; the seeds, which are harvested in February and March, contain no caffeine. The smell of the roasted coffee is pleasant, although the taste of the drink prepared therefrom is bitter and unpleasant. This species of coffee has not yet come into cultivation." (*F. F. Bruijning, in Verslagen van Landbouwkundige Onderzoekningen der Rijkslandbouwproefstations, no. 18, p. 115, 1915.*)

39354. KOKIA DRYNARIOIDES (Seem.) Lewton. Malvaceæ.
(*Gossypium drynarioides* Seem.)

From Mahana, Molokai, Hawaii. Presented by Mr. Joseph F. Rock, botanist, College of Hawaii, Honolulu, who secured them from Mr. Joseph P. Cooke. Received October 28, 1914.

"A few weeks ago I wrote Mr. Cooke, the owner of Molokai Ranch, on whose grounds the only tree of this species grows, asking if there were any seeds to be found on it, as you know this species was declared extinct, but it has revived again and one single branch produced some leaves and flowers as well as a few seeds. I am propagating a number of them here." (*Rock.*)

39355. ACACIA HORRIDA (L.) Willd. Mimosacæ. **Doorn boom.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, Agricultural Supply Association. Received October 24, 1914.

See S. P. I. Nos. 1805 and 3330 for previous introductions and description.

"A glabrous, flat-topped tree, usually spreading more than its height. The most widely distributed of all South African trees, extending from Capetown through the Karroo to Damaraland, Orange River Colony, Transvaal, Natal, and Delagoa Bay. Its range is, however, curiously affected in places, it being absent, possibly through frost, in several large flat alluvial localities where single trees have grown to perfection. It ascends to about 4,000 feet altitude from the eastern coast and considerably further from the western, but is absent from the higher parts of the Drakenburg, and seldom mixes with Proteaceæ, thus indicating that soil as well as climate controls its distribution. Occasionally it forms a fine spreading tree 30 to 40 feet in height, and with a stem 2 feet in diameter; much more frequently it is a small umbrella-shaped tree of 10 to 15 feet in height with a clear bole only to 6 or 8 feet, and the constant regrowth dots or covers the veld with smaller sizes in localities where it is not kept down.

"Although usually evergreen, yet in dry, cold, carroid localities it is often leafless for a considerable part of the year, and in some localities for years in succession, and is then enormously spiny and colors the veld white instead of green. In most places its use is principally for fuel, for which purpose there is no better wood; but as this does not, except near the towns, use up all that grows, its increase in remote localities is a difficult matter to check. Fire burns

the grass under mature thorn trees without doing them much damage, and as the seeds germinate most readily after being soaked in boiling water or half roasted, these grass fires aid rather than retard regrowth. Chopping off trees to the ground only induces an abundant coppice growth, but it is found that by chopping them off 2 feet above ground during summer the coppice growth is more easily controlled, and the stump often dies. Native localities usually become free of thorn trees eventually, partly through the unrestricted native demand for fuel, kraalwood, etc., and partly through the browsing of goats, which of all artificial methods is the surest means of keeping the tree down. A small brown scale insect, however (*Prosopophora prosopidis* var. *mimosae*), is found to kill the trees wholesale on the occasions of its visits in the Bedford district. During very dry winters it is not an uncommon practice to fell a few leafy thorn trees daily as a green bite for stock; during summer the shade of the spreading tree is sought after by cattle and sheep; young plants are always browsed, and where obtainable the roots are relished by goats; and for scenic effect there is perhaps no prettier tree, growing as it often does on a flat, rocky subsoil which will carry no better growth; on hot, rocky banks it is common, but it is never found in high, dense forest. Bark rough, thick, dark; formerly much used locally in the tanning of leather, and even now, at about half the price per ton as compared with black wattle, it pays to employ it for local use but not for export, as the percentage of tannin for the bulk is too low.

"The *doorn boom* is the host of an innumerable lot of pests, being often cleared of foliage by caterpillars of several large moths and by bagworms; its timber is often bored by *Apate dorsalis* and *Chrysobothris dorsata;* certain ants occasionally inhabit the thorns and induce a most thorny development; strange gall abortions or malformations of pods are caused by a fungus; another fungus (*Oecidium ornamentale*) makes artistic floriated curls of the young twigs; and Loranthus and mistletoe are frequent parasites.

"*Doorn boom* makes a strong, rough hedge if soaked seed is sown in line and kept watered till germination has taken place. It is also useful for sowing in beds of intermittent rivers with a view to arresting silt during future floods. It suffers severely during soft snowstorms, the horizontal branches and foliage breaking under a heavy weight of snow." (*Sim, Forest Flora of Cape Colony.*)

39356. Cocos nucifera L. Phœnicaceæ. **Coconut.**

From Panama. Secured by Mr. H. Pittier, of the Bureau of Plant Industry. Received October 29, 1914.

"The small Burica nut, of which I have not been able to obtain a whole specimen, but I send along the three shelled ones which I have been keeping here till I could do better. This is said to be very rich in oil and to be scarce also, except around Punta Burica on the boundary between Costa Rica and Panama." (*Pittier.*)

39357 and 39358.

From San Jose, Costa Rica. Presented by the National Museum, San Jose. Received October 24, 1914.

39357. Achradelpha mammosa (L.) O. F. Cook. Sapotaceæ. (*Lucuma mammosa* Gaertn. f.) **Sapote.**

See S. P. I. Nos. 35673 and 37813 for previous introductions and description.

39357 and 39358—Continued.

39358. ANNONA PURPUREA Moç. and Sesse. Annonaceæ.

"This species has large aromatic fruit, velvety on the outside, with raised hooked tubercles; yellow aromatic pulp which is edible when ripe, but said to be unwholesome if eaten to excess. A medium-sized forest tree ranging from Mexico to Panama and Venezuela." (*W. E. Safford.*)

39359 and 39360.

From Bogota, Colombia. Presented by Mr. Roberto Ancizar, secretary to the Colombian Legation, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received October 29, 1914.

39359. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

"One of the most delicious of the fruits of the higher regions of western South America; this variety is juicy and of a sweet acidulous flavor. Seeds relatively small in proportion to the pulp. Suitable for cultivation in the foothills of southern California." (*Safford.*)

39360. PASSIFLORA LIGULARIS Juss. Passifloraceæ. **Granadilla.**

"An egg-shaped fruit with parchmentlike shell filled with an abundance of sweet juice and many small seeds. Used in tropical America for making sherbets and ices alone or with the addition of lemon juice or spices. Of easy culture in all warm localities, growing in the form of a vine from trellises and arbors, and desirable not only for its fruit but for its beautiful flowers." (*W. E. Safford.*)

39361. ABUTILON THEOPHRASTI Medic. Malvaceæ. **Ch'ingma.**
(*Abutilon avicennae* Gaertn.)

Grown at Arlington Farm from seed received from Mr. R. A. Currie, Icnang, China, through Mr. A. H. Sugden, acting commissioner of customs, Hankow, China.

"Seeds of what purports to be *ta ma*. The capsules look to me small, and I am nearly sure that I have seen much larger ones, and I fear that these may be only the common hemp." (*Currie.*)

"The seeds from China are evidently those of the *ch'ingma* (*Abutilon theophrasti*), producing the so-called China jute or Tientsin fiber of commerce. *Ch'ingma* is cultivated from central China northward. Its fiber is stronger but somewhat harsher than that of India jute. It is used in this country to a limited extent, chiefly in the manufacture of jute carpets and rugs. The plant is adapted to the climate from Virginia to New York and westward to the Missouri Valley. It may be regarded as a promising fiber plant for introduction into this country, provided suitable methods can be devised for extracting the fiber and preparing it for market. We planted some of the seeds at Arlington Farm and secured 16 excellent plants about 3 meters high. The plants and also the leaves, flowers, and fruits were nearly twice the size of those of the ordinary velvet leaf planted at the same time, but otherwise no distinct difference has been detected between the two forms. We have harvested a quantity of seed from the plants this season, so as to have stock for sowing next year." (*L. H. Dewey.*)

39362. LYCOPERSICON ESCULENTUM Miller. Solanaceæ. **Wild tomato.**

From Funchal, Madeira. Presented by Mr. Charles H. Gable, director, Junta Agricola. Received October 31, 1914.

"The little wild tomato *Lycopersicum vulgare cerasiforme* which is found in Madeira is considered by Lowe (*A Manual Flora of Madeira*) as being the original stock from which our cultivated varieties have been derived. The same author states that besides 'growing spontaneously everywhere below 2,000 feet about Funchal and other towns and villages in Madeira, it is completely naturalized on the central rocky crest of the North Deserta.' The North Desert is an almost barren, uninhabited island which lies about 30 miles from Madeira. To quote further: 'It has been found also in the Great Salvage by Sr. C. C. Noronha: and the interior of Sao Iago, one of the Cape Verdes, between the Ribeira dos Pices and the Boa Entrada of Sta. Catarina. I found it mixed with *Momordica charantia* L., overspreading in vast tangled beds or masses whole miles of mountain tracts at an elevation of 3,000 to 4,000 feet above the sea.' The selection which has taken place in the development of our cultivated varieties has not greatly changed the general appearance of the plant. The writer has not had the opportunity of making the careful botanical study necessary for the intelligent comparison of the characters presented by this wild tomato and our cultivated varieties, so there will be presented here only very brief observations of the conditions in which the plants grow. One of these plants was transplanted to a favorable part of the garden where the ground was rich and had plenty of moisture. It made a tremendous growth, and at the end of three months the plant was 5 feet in diameter and 3½ feet high. Unfortunately, the plant was destroyed, so that it was impossible to complete the record. Another plant was found where it could not have had a drop of water for at least three months. It probably had started to grow during the last few rains of the spring, but had completed its growth during the heat and drought of summer. The particular spot where it grew was the hottest of the hot parts of the island. When it was found, the vine was apparently entirely dead and lying flat on the ground; the leaves had dried up and dropped off; but the fruits, every one of which was ripe, were clinging to the vine. It also seemed very strange to find that the fruits were all plump and firm—over 300 of them on this one vine. The fruits are so very acid that they can be used for little else besides soups, and the natives do not use them a great deal for even that. Their keeping quality, however, might prove a desirable characteristic in crossing with some of the highly developed varieties with the object of obtaining a good shipping tomato of pleasing flavor." (*Gable.*)

39363. HORDEUM VULGARE COELESTE L. Poaceæ. **Barley.**

From Jerusalem, Palestine. Presented by Mr. Ernest F. Beaumont, American Colony. Received October 28, 1914.

"*Prophet's* barley. This is grown around Mecca and is esteemed as sacred by the Mohammedans. No animal is made use of in its planting, harvesting, or thrashing, as such use would be considered as defiling it. You will notice that the kernels shell out from the husk quite clean, like wheat." (*Beaumont.*)

39364. ORYZA SATIVA L. Poaceæ. **Rice.**

From Salisbury, Southern Rhodesia. Presented by Mr. H. G. Mundy, Government agriculturist and botanist, Department of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received November 9, 1914.

"Mashonaland rice. Native crop grown in Southern Rhodesia." (*Mundy.*)

39365 to 39368. HORDEUM spp. Poaceæ. **Barley.**

From Pusa, India. Presented by Mr. Bernard Coventry, agricultural adviser to the Government of India, Imperial Department of Agriculture. Received November 4, 1914.

39365 and 39366. HORDEUM spp. **Barley.**

Huskless 6-rowed varieties.

39365. HORDEUM VULGARE COELESTE L.

A new form with very short awns.

39366. HORDEUM VULGARE HIMALAYENSE Rittig.

Smoke-colored grain. Received as *H. gymnohexastichon*, but identified by Dr. H. V. Harlan as above.

39367 and 39368. HORDEUM VULGARE L. **Barley.**

39367. Common 6-rowed barley.

39368. Common 6-rowed barley, husked.

39369 to 39375. PERSEA AMERICANA Miller. Lauraceæ.
(*Persea gratissima* Gaertn. f.) **Avocado.**

From Altadena, Cal. Collected by Mr. Wilson Popenoe, of the Bureau of Plant Industry. Bud sticks received November 9, 1914. Quoted notes by Mr. Popenoe.

39369. "(No. 6. November 2, 1914.) *Taft* avocado. This variety is one of the most promising of the thick-skinned, spring-ripening avocados which has yet fruited in California. It originated with Mr. C. P. Taft, of Orange, whose name it bears. Its parentage is not definitely known, but it belongs, without doubt, to the type from Atlixco, Puebla, Mexico, which has been so widely disseminated in southern California by John Murietta, of Los Angeles. The *Taft* is broadly pyriform, averaging about 1 pound in weight, with a bright green, undulating surface and thick, tough skin, which separates readily from the flesh. The seed is rather small, comparatively speaking, and fits tightly in its cavity. The flesh is smooth, fine grained, without a trace of fiber, of rich, nutty flavor, and excellent quality. Its keeping qualities are remarkable, and it ships well. The tree is a very vigorous grower and buds easily. The foliage is reddish bronze when young, deep green later. In California the fruit commences to ripen in May and will hang on the tree in perfect condition through June and July. Owing to the difference in climatic conditions, the season may be somewhat earlier in Florida. While the variety has not been as prolific in fruiting as some of the others, this may have been due partly to the fact that the parent tree, which is the only one yet in full bearing, has been cut back severely for propagation. Mr. Taft has taken over 10,000 buds from it in a single season. For trial in southern Florida."

39370. "(No. 7. November 2, 1914.) *Dickinson* avocado. This is an avocado of the true Guatemalan type, the seed from which the parent tree was grown having been brought from Guatemala City to Los Angeles about 16 years ago. In size it is slightly smaller than the best varieties of the type, averaging not over 10 ounces in weight.

39369 to 39375—Con. (Quoted notes by Mr. Wilson Popenoe.)

It is, however, unusually prolific. The form varies from oval to broadly obovate. The surface is rough, almost tuberculate, dark green until fully ripe, when it changes to deep purple. The skin is thick, woody, granular in texture. The flesh is free from fiber, smooth, and of good flavor. The seed is slightly under average size, compared to the size of the fruit, and is perfectly tight in the cavity. The tree appears to be a vigorous grower and about as hardy as most of the Guatemalan varieties grown here. Although it has been grown under unfavorable conditions and is somewhat small in size, the parent tree has produced more than 800 fruits in a single season. It ripens from April to June. To be tried in southern Florida."

39371. "(No. 8. November 2, 1914.) *Meserve* avocado. A variety originated at Long Beach, Cal., on the ranch formerly owned by Mr. A. R. Meserve. The seed is believed to have come from Hawaii; in characteristics of fruit and foliage the variety is almost identical with some of the avocados of Guatemalan and southern Mexican origin which are grown in California, but in view of the fact that the Guatemalan avocados were long ago introduced into Hawaii this is not surprising. As a commercial variety the *Meserve* has the advantage that it is nearly round. Quality is its other strong point, the flavor being unusually rich and pleasant. The skin is deep green in color, thick and woody, as in all of this type. Good specimens will average nearly a pound in weight. The seed is medium sized, tight in the cavity. In growth the tree is vigorous, and while the parent was badly injured in the cold weather of January, 1913, this may not have been due to its tenderness so much as to its exposure and condition at the time. It is a good bearer, and on the whole seems to be a very promising variety. The season is April and May in southern California. For trial in southern Florida."

39372. "(No. 9. November 2, 1914.) *Solano* avocado. This is one of the largest varieties yet fruited in California. It originated on the property of Mr. Alfred Solano at Hollywood, Cal., and is of the southern Mexican or Guatemalan type. Probably its origin may be sought in one of the shipments of avocados brought to Los Angeles from Atlixco, Puebla, Mexico, by John Murietta. In shape the *Solano* is oval to oblong pyriform; the size is large, averaging from 16 to 28 ounces in weight. The skin is thick, tough, externally green in color, and almost smooth. The flesh is creamy yellow in color, smooth, and free from fiber. The parent tree has been grown in the center of a lawn where it received a good deal of water, consequently the fruits have not been quite as rich in flavor as they would probably have been under normal conditions. The seed is small in comparison with the size of the fruit, and it is tight in the cavity. For a variety of this size, the *Solano* is very productive. Its season is May and June. In growth it is vigorous and strong, but it does not produce good bud wood and is more difficult to propagate successfully than some others. For trial in southern Florida."

39373. "(No. 10. November 2, 1914.) *Blakeman* avocado. Originated on the Dickey place at Hollywood, Cal., from a seed imported from Atlixco, Puebla, Mexico, by John Murietta, of Los Angeles. It is an excellent variety of the thick-skinned Guatemalan type. In form it is broadly obovate, but broader at the basal end than is common with

39369 to 39375—Con. (Quoted notes by Mr. Wilson Popenoe.)

fruits of this shape, and without any suspicion of a 'neck.' It will average slightly less than a pound in weight. The surface is deep green in color, the skin thick and woody. The flesh is smooth, fine in texture, buttery, and of very rich, pleasant flavor, considered one of the best in quality of the Guatemalan varieties fruiting in California. The seed is about medium in size and tight in the cavity. The parent tree, at 8 years of age, is bearing between 200 and 300 fruits, which can be considered a good record in view of the fact that seedlings of this type do not usually come into bearing until the sixth or seventh year. The season of ripening is May and June. In growth it is strong and vigorous. For trial in southern Florida."

39374. "(No. 11. November 2, 1914.) *Ganter* avocado. One of the best known and largest local varieties of the thin-skinned, fall ripening Mexican type of avocado. It originated at Whittier, Cal. The form is oblong ovate, the weight being sometimes as much as 10 or 12 ounces, though the average would probably be somewhat less. The skin is scarcely thicker than that of an apple, and it adheres closely to the flesh. Externally the color is light green, with minute russet spots. The flesh is creamy yellow in color, of very rich and nutty flavor. The seed is rather small, but sometimes loose in its cavity. The fruit shows a tendency to decay around the apical end and does not always ripen evenly. This may possibly be avoided by picking at a certain stage before the decay has commenced to show. The tree is a very vigorous grower and much hardier than the average variety of the Guatemalan type. It is extremely prolific and comes into bearing at a very early age, trees two years from the bud sometimes carrying several fruits. It may be of value for cultivation in sections of Florida which are too cold for the *Trapp* and other varieties of that class."

39375. "(No. 12. November 2, 1914.) *Harman* avocado. This, like the *Ganter*, is a thin-skinned, fall-ripening avocado, its season being late September to early November. It is one of the most vigorous and hardy varieties yet grown in California and when planted in orchard form makes a handsome, shapely tree. The fruit is obliquely obovate in shape and weighs from 7 to 10 ounces, or even more in exceptional cases. The surface is smooth, glossy, light green in color, overspread with purplish maroon and with numerous light yellow dots. The skin is thin and adheres closely to the flesh. In texture the flesh is very buttery and smooth, in color yellow when fully ripe, and in flavor very rich and nutty. The seed is not above average size, but is loose in its cavity, which being rather large makes the proportion of flesh smaller than in some other varieties. When allowed to hang on the tree until late in the season the fruits frequently crack at the apical end, the fissure sometimes extending clear through into the seed cavity. Because of its hardiness it will be desirable to give this variety a trial in those sections of Florida which are too cold for the *Trapp* and other avocados of that class."

39376 to 39381.

From Salisbury, Southern Rhodesia. Presented by Mr. H. G. Mundy, Government agriculturist and botanist, Department of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received November 9, 1914. Quoted notes by Mr. Mundy.

38376 to 39381—Continued. (Quoted notes by Mr. H. G. Mundy.)

39376. ELEUSINE CORACANA (L.) Gaertner. Poaceæ. **African millet.**

"*Rapoko.* Seeds of the native crop grown in Southern Rhodesia."

39377. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. **Sorghum.**

39378 to 39380. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"Seeds of the native crop grown in Southern Rhodesia."

39378. "*Durra.* Probably American in origin; known locally as *Sapling.*"

39379. "*Durra.* White."

39380. "*Sorghum.* Obtained by us from Australia, but a native of the west coast of Africa and known as *Mazagua.*"

39381. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.**
(*Pennisetum typhoideum* Rich.)

"*Inyouti,* native crop grown in Southern Rhodesia."

39382 and 39383. PASSIFLORA spp. Passifloraceæ.

From Bogota, Colombia. Presented by Mr. Henry Coronado, Republic of Colombia Bureau of Information, Washington, D. C., through Mr. W. E. Safford, of the Bureau of Plant Industry. Received November 6, 1914. Quoted notes by Mr. Safford.

39382. PASSIFLORA LIGULARIS Juss. **Granadilla.**

"Fruit ovoid, very juicy, with fine flavor. Used in Colombia for making sherbets. Suitable for covering trellises and arbors."

39383. PASSIFLORA MALIFORMIS L. **Curubá.**

"Fruit depressed spheroid, hard shelled. Suitable for packing. Pulp of fine flavor; used for making sherbets. The variegated, beautiful red and white flowers with blue corona filaments are sweet scented. The involucre, composed of 3 ovate-acute bracts joined at the base, is larger than the flower itself. The shell of the fruit is sometimes so hard that it must be broken with a hammer. The inclosed pulp has a pleasant grapelike flavor."

39384 to 39391.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received November 7, 1914. Quoted notes by Mr. Itié.

39384. ORYZA SATIVA L. Poaceæ. **Rice.**

"Creole rice from dry lands. Harvested in the Mango Pass, near San Juan Bautista, Tabasco, Mexico."

39385. RIVERA CORYMBOSA (L.) Hallier. Convolvulaceæ.

"*Eschaventun.* Convolvulaceous plant, abundant in the Department of Monte Cristo, Tabasco, and in the States of Campeche and Yucatan. The fragrant flower produces honey."

39386 and 39387. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

39386. "White cowpea. Agricultural experiment station of Tabasco. This variety appeared in a lot of *Blackeye* cowpeas. It is not known if this is a sport or an accidental sowing. The flower is

39384 to 39391—Continued. (Quoted notes by Mr. Gabriel Itié.)

white and identical with the flower of the *Blackeye*, but the seed is entirely white, having at times a black border around the hilum. Edible."

39387. "Cowpea *panadero* (baker's cowpea), Gonzalez Cosio Colony, Department of Huimanguillo, Tabasco, Mexico. This variety, known under the name of 'baker's bean' (*panadero* bean) was probably introduced from Porto Rico by the colonists. The seed is edible, especially when young."

39388. ANNONA GLABRA L. Annonaceæ. **Anona.**

"*Corcho.* Grows in abundance on the margins of the lakes around San Juan Bautista, Tabasco, Mexico. The pulp of the fruit is of an orange color and very fragrant. Eaten at times by the inhabitants. Sometimes used as a stock upon which to graft other anonas."

39389. CEIBA ACUMINATA (S. Wats.) Rose. Bombacaceæ. **Pochote.**

"*Pochote.* Comes from the State of Oaxaca, Mexico. According to J. Guardiola (*Boletin de la Direcion de Agricultura, Parte I, January, 1912, p. 30*), this variety is recommended for its earliness and the small height it attains. It can be reproduced by seeds or cuttings, and in the following year, when it has reached a height of 70 to 80 cms., it commences to flower and fruit. This depends on the climate and the nature of the soil in which the plant is grown. It can be grown in rocky soil if necessary. Its growth is rapid. Its cultivation will be very productive after three years. Reproduction by cuttings is much used in the country in the forming of live hedges of very fine appearance in the flowering season. In the State of Oaxaca its production exceeds 160,000 kilos annually. It is produced in the districts of San Carlos, Yautepec, Tehuantepec, Juchitan, Tuxtepec, Juchila, and Pochutla, but it is not cultivated. It is cultivated on a small scale in the State of Michoacan, and in Ario de Rosales a price of 50 cents per kilo of clean fiber has been realized."

39390 and 39391. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"Harvested in the experimental station of Tabasco from seed from Oaxaca. Very prolific and piquant."

39390. Red pepper. **39391.** Yellow-podded red pepper.

39392. THRINAX MICROCARPA Sargent. Phœnicaceæ. **Palm.**

From Pumpkin Key, Florida. Collected by Mr. David A. Bisset, of the Bureau of Plant Industry.

"Seeds of a palm growing in a dense hammock growth on Pumpkin Key, about 40 miles below Miami. It is a very attractive palm and might prove of value as an ornamental. The largest plant seen was about 15 feet high and had a trunk 4 inches in diameter. All of the leaves are silvery on the under side and they keep this glaucous character until they turn brown. It is probably a native of the keys, but it is somewhat rare, as on Pumpkin Key only 13 or 14 specimens were found." (*D. A. Bisset.*)

39393 and 39394. AMYGDALUS PERSICA L. Amygdalaceæ.
(*Prunus persica* Stokes.) **Peach.**

From La Paz, Bolivia. Presented by Mr. George M. McBride, director, American Institute. Received November 10, 1914.

39395 to 39411. HORDEUM spp. Poaceæ. **Barley.**

From Sydney, New South Wales. Presented by Mr. G. Valder, undersecretary and director, Department of Agriculture. Received November 12, 1914. Quoted notes by Mr. Valder.

39395 and 39396.

"From the experiment farm, Cowra. Harvested December, 1913."

39395. HORDEUM VULGARE L.

"*Shorthead* barley, dark grain."

39396. HORDEUM VULGARE COERULESCENS Seringe.

"*Roseworthy Oregon* barley, grain dark colored."

39397 to 39401. HORDEUM VULGARE L.

39397. "Barley No. 18. Grain slightly dark."

39398. "Barley No. 22. Remarkably early."

39399. "Barley No. 24. Early variety, short straw, grain pale colored."

39400. "Barley No. 36."

39401. "Barley No. 49. A good barley, not well grown."

39402 to 39405.

"From the experiment farm, Bathurst."

39402. HORDEUM DISTICHON ERECTUM Schubl.

The Maltster.

39403. HORDEUM VULGARE L.

Cape.

39404. HORDEUM VULGARE VIOLACEUM Koern.

Black Hull-less.

39405. HORDEUM VULGARE COERULESCENS Seringe.

Sea of Azof.

39406 to 39411.

"From the Wagga Experiment Farm, Bomen."

39406. HORDEUM DISTICHON L.

Kinver.

39407. HORDEUM DISTICHON NUTANS Schubl.

Gisborne.

39408. HORDEUM DISTICHON ERECTUM Schubl.

Archer.

39409 and 39410. HORDEUM VULGARE L.

39409. *Skinless.* 39410. *Canadian Battledore No. 1.*

39411. HORDEUM DISTICHON ERECTUM Schubl.

Canadian Malting No. 2.

39412. FERONIELLA LUCIDA (Scheff.) Swingle. Rutaceæ.

From Buitenzorg, Java. Presented by the Department of Agriculture. Received November 14, 1914.

See S. P. I. Nos. 28123, 34472, and 38860 for previous introductions.

39413. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ. **Chestnut.**

From Tokyo, Japan. Presented by Miss B. Catherine Pifer. Received November 13, 1914.

Imperial chestnut.

39414. FRANKLINIA ALATAMAHA Bartram. Theaceæ.

(*Gordonia pubescens* L'Herit.)

From Philadelphia, Pa. Presented by Mr. Ogleby Paul, Fairmount Park. Received October 7, 1914.

See S. P. I. Nos. 26930 and 26931 for previous introductions and description.

"This is probably one of the least known of our small trees, and yet it stands among the most beautiful of our native plants. In habit of growth and in the leaf the Gordonia, or, as it is sometimes called, Franklinia, is not unlike a magnolia, although in the flower it more nearly resembles a camellia. Furthermore, it is especially valuable on account of its late flowering period, plants being in bloom at the present time in the Arnold Arboretum. The Gordonia is of a rather upright habit, forming a well-shaped head. It is a member of the tea family, Theaceæ. Its finely crenate, lance-obovate leaves are of the color of the leaves of *Magnolia acuminata*, but whitish downy beneath. The fragrant flowers are borne on the ends of the branches on short, stout peduncles. They are pure satiny white, about 2½ inches in diameter and bowl shaped at their best, later becoming flatter as the flower ages. The stamens are bright golden yellow and are placed directly on the petals, where they form a tuft perhaps a half inch or more in diameter, making a beautiful combination of color against the pure white of the petals. The pod is globular, light green, and covered with a whitish down. This plant was first discovered in southern Georgia, whence it was introduced into Europe in 1744, and named by Dr. Garden in honor of his 'old master, Dr. James Gordon,' and by Ellis it was dedicated to a London nurseryman of the same name. This nurseryman appears to have been a contemporary of Philip Miller. It was called Franklinia in honor of Dr. Franklin. During the past hundred years it has not been found in a wild state, although much searched for. This fact makes it not only a rare and valuable tree, but one which should be more propagated and kept, lest it be lost entirely to future generations. In the vicinity of Philadelphia there are several trees growing in the open without protection, but north of that point its hardiness can not be wholly depended upon. In protected situations, however, I see no reason why we of the North can not enjoy its exquisite beauty, provided, of course, we give it protection. In the Arnold Arboretum the plants receive part shelter from the other plants, which are planted about them, and came through the winter of 1913–14 when so many other beautiful things perished. The Gordonia may be propagated from layers or from seeds, and will thrive in a peaty soil or in leaf mold and sand." (*Hubert M. Canning, in Horticulture, Oct. 24, 1914.*)

39415. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent of the botanic gardens. Received November 14, 1914.

"This seems to be the only species of Spathodea generally known in the East. The tree flowers profusely at Peradeniya almost throughout the year, except in the dry season, but seldom or never bears fruit here. It produced, however, fruit and seeds in our former garden at Anuradhapura, now abandoned, where the climate is much drier than at Peradeniya, the rainfall being limited to three months of the year." (*Macmillan.*)

39416 and 39417. Solanum spp. Solanaceæ.

From Bremen, Germany. Presented by Prof. Dr. G. Bitter, Bremen Botanic Garden. Received November 13, 1914. Quoted notes by Dr. Bitter.

"Cultivated in the botanic garden, Bremen, 1914, from seeds."

39416. Solanum caesium Griseb.

"Seeds received from Oran, northern Argentine."

39417. Solanum acaule Bitter.

"Seeds collected in 1913 in Oruro, Bolivia."

39418 to 39422.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Cuban Agricultural Station. Received November 14, 1914. Quoted notes by Mr. Roig.

39418. Eugenia tuberculata (H. B. K.) DC. Myrtaceæ.

"*Grajo.* A myrtaceus shrub producing hard wood."

39419. Harpullia cupanioides Roxburgh. Sapindaceæ.

"A fine tree cultivated at the station. Of rapid growth and probably producing good timber."

Distribution.—A tree bearing erect panicles of yellow flowers, followed by pendent clusters of orange-colored fruits, found in India and Ceylon and eastward to Sumatra, Java, and Borneo.

39420. Pithecolobium tortum Martius. Mimosaceæ.

"*Humo.* A tree producing valuable golden-colored timber. Much used for posts and fences."

39421. Sophora tomentosa L. Fabaceæ.

"*Tambalisa.* A very ornamental shrub with yellow flowers. It forms wide masses and is suitable for planting around the house and gardens."

39422. Trichilia havannensis Jacq. Meliaceæ.

"*Siguaraya.* A low tree much used for hedges and popularly employed, as a drug plant, against rheumatism and other diseases."

39423 to 39442.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 17, 1914. Quoted notes by Mr. Meyer.

39423. Holcus sorghum L. Poaceæ. **Kaoliang.**
(*Sorghum vulgare* Pers.)

"(No. 2118a. Linhsien, Honan, China. July 5, 1914.) A variety of *kaoliang* grown as a fodder for domestic animals. Is generally sown out very thickly either in small patches or as strips along fields. In appearance is much like Johnson grass. Chinese name *Chiao ts'ao kaoliang*, meaning 'emerald-grass kaoliang.'"

39424. Cannabis sativa L. Moraceæ. **Hemp.**

"(No. 2119a. Luanfu, Shansi, China. July 13, 1914.) A variety of hemp, said to produce long, strong, and fine fiber. Grown on terraces on somewhat moist soil at altitudes between 3,000 and 4,000 feet."

39423 to 39442—Continued. (Quoted notes by Mr. F. N. Meyer.)

39425. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

"(No. 2120a. Southwest Shansi, China, August 4 to 14, 1914.) Var. *inermis*. A variety of castor bean having spineless burs. Occurs sporadically in fields among the ordinary sort. Of value to students of mutation and variation in plants, and possibly of commercial value also as producing less waste material than the common varieties."

39426. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

"(No. 2121a. Mountains between Hotien, near Linhsien, Honan, and Luanfu, Shansi, China. July 7 to 12, 1914.) A wild alfalfa, found everywhere between grasses, bowlders, rocks, and pebbles, on banks, cliffs, etc.; of low spreading growth, foliage small, flowers of blue color, large individually, but racemes small. Branches not erect except when having some support. Thrives best, apparently, at altitudes between 2,000 to 4,000 feet above sea level. Of value possibly as a pasture plant in the intermountain sections of the United States. This alfalfa may be one of the original forms in which this important forage plant occurs on the globe, and the erect-growing varieties now so extensively cultivated might have been derived from one of these prostrate forms."

39427. INCARVILLEA SINENSIS Lamarck. Bignoniaceæ.

"(No. 2122a. Near Wuwang on the Hwang River, Shansi, China. August 11, 1914.) Var. *floreflava*. A variety of this biennial, having large, pale-yellow flowers, instead of rosy ones. Of value as an ornamental for the hardy border. Of special interest to botanic gardens."

39428. AMYGDALUS sp. Amygdalaceæ. **Peach.**

"(No. 2123a. Sianfu, Shensi, China. August 21 to 26, 1914.) Stones of the real wild peach, growing in the mountains one day's journey south of Sianfu. The fruits are small, hard, and sourish, but there is considerable variation in them as regards size and taste. They are apparently all freestones, and while some have red flesh near the stone, others are white throughout. The Chinese eat these fruits out of hand, but they do not appeal to the white races, although they might be utilized when preserved, as they possess the real peach flavor. Local name *Ying t'ao*, meaning 'cherry peach.'"

39429 and 39430. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

39429. "(No. 2124a. Peking, China, June 25, 1914.) A large apricot of soft yellow color and of mango shape, which is a very unusual form among apricots. Said to come from the vicinity of Paotingfu, Chihli Province."

39430. "(No. 2125a. Peking, China. June 27, 1914.) An apricot with fruits as large as small apples; of whitish yellow color with some blush on one side. Of fresh and sweet taste. Said to come from the vicinity of Paotingfu."

39431. XANTHOCERAS SORBIFOLIA Bunge. Sapindaceæ.

"(No. 2126a. Chaoyu, Shansi, China. July 22, 1914.) A shrub, occasionally growing into a small-sized tree, found in loess cliffs. The shiny pinnate foliage reminds one of an ash, but the drooping racemes of white flowers, with yellow stamens, produced in great masses in early summer, give the shrub quite a distinct appearance. The Chinese eat the kernels of the fruit and call the plant *Mu kua hua*, meaning

39423 to 39442—Continued. (Quoted notes by Mr. F. N. Meyer.)

'quince flower,' on account of the large fruits resembling those of the Japanese quince. This shrub, closely related to the horse chestnut, is decidedly ornamental and of special value as a garden shrub for those semiarid sections of the United States where the winters are not too severe."

For illustrations of this shrub as seen growing in China and of its fruit and foliage, see Plates I and II.

39432. PRINSEPIA UNIFLORA Batalin. Amygdalaceæ.

"(No. 2127. Near Fuchengchen, Shansi, China. July 21, 1914.) A spiny shrub, having many long branches, growing from 3 to 5 feet in height, and of spreading habits. Foliage lanceolate and serrated, resembling that of a Rhamnus. Flowering early in May with pale rosy flowers, produced in great masses. The fruits, which are of dark-red color and resemble small cherries in general looks, ripen in July. They are quite juicy, but sour; however, they vary a good deal as regards size, degree of juiciness, and acidity, some being edible out of hand, while others are very acrid. By selection, strains could be obtained, no doubt, which could be cultivated as garden fruits. The shrubs love a well-drained situation and thrive quite well even on rocky débris. Of value as an ornamental spring-flowering bush and as a prospective fruiting shrub, especially for the drier parts of the United States where the winters are not too severe. Local Chinese name *Tz'ŭ yü*, meaning 'spiny elm.'"

For illustrations of the Chinese Prinsepia in flower and in fruit, see Plates III and IV.

39433. RHAMNUS sp. Rhamnaceæ.

"(No. 2128a. Kulo, Shansi, China. July 24, 1914.) A tall, shrubby Rhamnus, often growing into a small tree. Of spreading habits, leaves slender, lanceolate and serrate, looking not unlike slender *davidiana* peach leaves. This shrub is apparently rare; it is found here and there in loess cliffs and on old grave mounds; it seems to be able to withstand a good deal of alkali. Of value as a park shrub and possibly as a hedge plant, especially for the drier sections of the United States. The purplish black berries possess a sickening sweet taste and are apparently not eaten by the Chinese."

39434. AMPELOPSIS ACONITIFOLIA DISSECTA (Carr.) Koehne. Vitaceæ.

"(No. 2129a. Pingyangfu, Shansi, China. August 2, 1914.) A variety of Ampelopsis, with finely cut foliage, of light-green hue, and bearing dull-yellow berries. Very ornamental when covering a wall or trained over some latticework. Of value as a porch, arbor, and pergola vine, especially in semiarid climes."

39435. VICIA sp. Fabaceæ. **Vetch.**

"(No. 2130a. Mountains near Hotien, near Linhsien, Honan, China. July 7, 1914.) A vetch of vigorous growth, foliage glabrous. Found in rocky crevices and apparently able to withstand drought quite well. Of value possibly for forage purposes."

39436 to 39439. PRUNUS spp. Amygdalaceæ.

39436. PRUNUS HUMILIS Bunge. **Plum.**

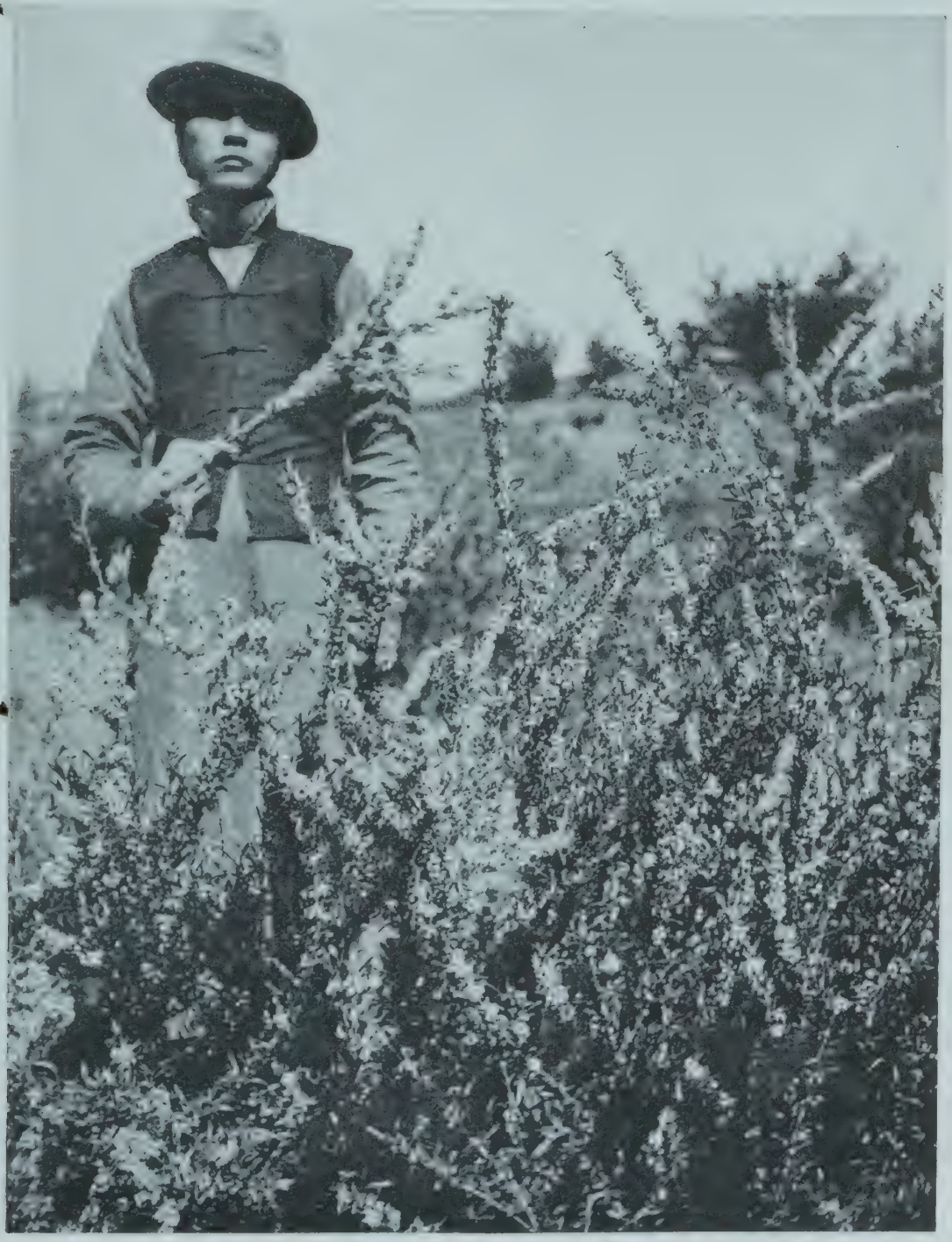
"(No. 2131a. Yuncheng, Shansi, China. August 11, 1914.) A variety of wild Chinese dwarf plum, with fruits as large as good-

XANTHOCERAS SORBIFOLIA. (SEE S. P. I. No. 39431.)

Clump of this shrub, as seen in loess cliffs; quite attractive with their shiny green, pinnate foliage. As may be surmised, this shrub is able to withstand a good deal of drought, and it is recommended as an ornamental shrub or small tree for gardens in semiarid regions. (Photographed by Frank N. Meyer, Chaoyu, Shansi, China, July 23, 1914; P12176FS.)

FRUITING BRANCH OF XANTHOCERAS SORBIFOLIA. (SEE S. P. I. No. 39431.)

This North Chinese plant belongs to the horse-chestnut family. It is found wild as a shrub in dry loess banks and cliffs in Shansi, Honan, Shensi, and Kansu, in which provinces the country people eat the kernels, calling the plant *Mu kua hua* (quince flower), presumably on account of the fruits somewhat resembling Japanese quinces in appearance. In temple courts around Peking one frequently finds this plant cultivated, and in such places it grows into a small tree, often with a dense head of foliage. Though seldom seen in American gardens, it deserves to be more widely planted, especially in dry, sunny situations, where its masses of white flowers with yellow and red blotches in the center appearing in May make the plant of great decorative value. (Photographed by Frank N. Meyer, at Chaoyu, Shansi, China, July 23, 1914; P12264FS.)



THE CHINESE PRINSEPIA (PRINSEPIA UNIFLORA) IN FLOWER. (SEE S. P. I. No. 39432.)

As a flowering shrub for dry regions the Prinsepia is well worthy of introduction. Its small white flowers are crowded densely around the branches. (Photographed by Frank N. Meyer, in the mountains near Tsintse, China, May 6, 1907; P5282FS.)

FRUITING BRANCHES OF A RECENTLY INTRODUCED CHINESE PRINSEPIA (PRINSEPIA UNIFLORA). (SEE S. P. I. NO. 39432.)

This dry-land spiny shrub should be adapted to the extremes of drought and cold of the Great Plains area and the extreme Southwest. Its fruits are dark red in color and vary a good deal in size and in degree of acidity and amount of pulp. It is probably capable of considerable improvement by selection. (Photographed by Frank N. Meyer, Fuchengchen, Shansi, July 21, 1914; P13147FS.) Natural size.

39423 to 39442—Continued. (Quoted notes by Mr. F. N. Meyer.)

sized cherries, but of sour flavor. Said to grow here and there in the mountains near Yuncheng. Chinese name *Jou li tzŭ*, meaning 'fleshy plum.'"

39437 and 39438. PRUNUS SIMONII Carr. **Plum.**

39437. "(No. 2132a. Hotien, near Linhsien, Honan, China. July 7, 1914.) A large variety of green plum, having a small stone; flesh somewhat hard and sour. To be used for obtaining new types."

39438. "(No. 2133a. Paotienchen, Shansi, China. July 17, 1914.) A very large variety of green plum, with some violet blush on one side. Flesh somewhat hard, a good shipper, apparently. To be used for obtaining new types."

39439. PRUNUS ARMENIACA L. **Apricot.**

"(No. 2134a. Near Lienma, Shansi, China. July 20, 1914.) Wild apricots, growing in great profusion here and there on the mountain sides at altitudes between 3,000 and 5,000 feet above sea level. Trees of medium size, fruits generally small and sourish, but often most beautifully colored. The natives collect these fruits for their kernels, which are pickled in brine after the skin has been removed and are eaten as appetizers before meals. They are also used in high-class confectionery, like almonds, which, strange to say, the Chinese do not have. Chinese name *Shan hsing*, meaning 'mountain apricot.' For trial in some northern sections like Colorado, Utah, Wyoming, etc."

39440 to 39442. HOLCUS SORGHUM L. Poaceæ. (*Sorghum vulgare* Pers.) **Kaoliang.**

39440. "(No. 2135a. Near Tachingkuan, on the Hwang River, Shansi, China. August 15, 1914.) A variety of kaoliang, with pale amber-colored seeds and having heavy spikes. Grown on reclaimed mud flats along the Yellow River, where the fields are often inundated for several weeks at a time. The plants grow extraordinarily tall, specimens of 15 feet in height not being rare."

39441. "(No. 2136a. Near Tungchowfu, Shensi, China. August 16, 1914.) A variety of kaoliang with reddish brown seeds; of slender, medium-tall growth and having orange-red stems. Grown mostly in small patches and strips around fields, principally for the bright-red skin of its stems, which is much used in fancy mat weaving."

39442. "(No. 2137a. Mingyangtcheng, Shansi, China. August 12, 1914.) A variety of kaoliang of medium-tall growth, having drooping panicles and shining, dark reddish brown seeds. Grown mostly in small patches and strips around fields. Is much used for broom manufacture."

39443. CALAMUS sp. Phœnicaceæ. **Palm.**

From Manila, Philippine Islands. Presented by the director, Bureau of Agriculture. Received November 18, 1914.

39444. ORYZA SATIVA L. Poaceæ. **Rice.**

From Bangkok, Siam. Presented by Mr. Carl C. Hansen, American vice and deputy consul general. Received November 19, 1914.

"Siamese paddy known as *Kaw Saican*, which occurs in Thong, Amphur Muang Sawankaloke." (*Hansen.*)

39445 and 39446. ORYZA SATIVA L. Poaceæ. **Rice.**

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul. Received November 17, 1914.

39445. "*Amonquili* rice, from the Alberique district, Province of Valencia, Spain. The commercial classes of rice in the Valencia regions, especially along the north and south banks of the Jucar River, or center of the rice district, are at present *Benlloch* or *Belloch* [S. P. I. No. 38685] and *Amonquili*. During 1913 the two were cultivated in the proportion of 80 per cent for the first and 20 per cent for the second, and in the season just beginning the *Benlloch* will certainly be overwhelmingly preferred in view of repeated excellent results obtained by experiment stations and in actual cultivation." (Extract from letter of *Mr. Claude I. Dawson, American consul, dated Apr. 25, 1914.*)

39446. "*Bomba* rice, from the Calasparra district, Province of Murcia, Spain. The *Bomba* variety, which formerly was more extensively cultivated in this region than all other classes, but in recent years gave such poor results and proved so susceptible to the undefinable disease known as the *falla* (the literal translation of which is 'deficient'), which so greatly depleted the crops of 1911 and 1912 that it is now hardly cultivated at all. The *Bomba* class was cultivated with more or less success, but although a select variety and excellent in its food value, cultivators never secured the best results claimed for it. It is of Japanese origin, but was imported here from China. In Lombardy (Italy) the grain is said to reach much larger size than in the vega of Valencia, due probably to more care in the selection of seed." (Extract from letter of *Mr. Claude I. Dawson, American consul, dated Apr. 25, 1914.*)

39447 to 39453.

From Calulo, Angola, Africa. Presented by Mr. W. P. Dodson. Received November 16, 1914. Quoted notes by Mr. Dodson.

39447 to 39451. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"This sorghum is ground up by the natives and used for porridge. Native name *Mballa*."

39452. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"A very useful little black-eyed pea, called *Makunde*.

39453. ELEUSINE CORACANA (L.) Gaertner. Poaceæ. **African millet.**

"The native name is *Luco*. It is ground up by the natives and used for porridge."

39454 to 39456. ANNONA spp. Annonaceæ.

From Amani, German East Africa. Presented by the director, Imperial Agricultural Institute. Received November 11, 1914.

39454. ANNONA CHERIMOLA Miller. **Cherimoya.**

See S. P. I. Nos. 27483, 39352, and 39359 for previous introductions and description.

39455. ANNONA MURICATA L. **Soursop.**

39456. ANNONA SENEGALENSIS Persoon.

See S. P. I. Nos. 30835 and 38525 for previous introductions and description.

39457. FICUS sp. Moraceæ. **Fig.**

From Kiayingchow, China. Presented by Rev. George Campbell. Received November 28, 1914.

This seed was sent in by Mr. Campbell as *Shan p'i p'a*, or "mountain loquat."

39458 and 39459.

From Florida. Collected by Mr. David A. Bisset, of the Bureau of Plant Industry, on Mr. Charles Deering's place, Buena Vista, Fla. Received November 27, 1914. Quoted notes by Mr. Bisset.

39458. DURANTA REPENS L. Verbenaceæ.

"A beautiful ornamental evergreen shrub of spreading habit and pendent branches, growing to a height of 8 feet and bearing racemes of small light-blue flowers followed by bright-yellow fruits. The glossy green foliage and the bright-yellow berries form a striking contrast and serve to make the shrub a most attractive one. Flowers and berries are seen on the plant at the same time."

39459. LAWSONIA INERMIS L. Lythraceæ. **Henna.**

"An ornamental evergreen shrub with small glaucous leaves and panicles of small cream-colored flowers which possess a most agreeable fragrance. The flowers are followed by small green capsules which change from green through dark red to brown. Capsules are somewhat persistent, this being the only objectionable feature of the plant. Shrub adapted for ornamental purposes and possibly of value in perfumery."

39460 to 39462. HORDEUM spp. Poaceæ. **Barley.**

From Pusa, India. Presented by Mr. Bernard Coventry, agricultural adviser to the Government of India, Imperial Department of Agriculture. Received November 24, 1914. Quoted notes by Mr. Coventry.

39460. HORDEUM DISTICHON IANTHINUM Koern.

"Black huskless, 2-rowed. Grown in the Punjab."

39461. HORDEUM VULGARE COELESTE L.

"Amber-colored, huskless 6-rowed barley. Grown in the Punjab."

39462. HORDEUM VULGARE L.

"The common 6-rowed bearded barley, locally obtained. Grown in the Punjab."

39463. (GYNOPOGON ILICIFOLIUS (Muell.) K. Schumann. Apocynaceæ.
(*Alyxia ilicifolia* Muell.)

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received November 25, 1914.

"A white-flowered shrub growing about 6 feet high, producing a profusion of berries of a bright orange-scarlet. It should make a valuable ornamental plant for decorative purposes." (*Pink.*)

39464. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Gizeh, Egypt. Secured by Prof. S. C. Mason, of the Bureau of Plant Industry, through Mr. Thomas W. Brown, Ministry of Agriculture, Gizeh. Received November 28, 1914.

39465 to 39484.

From China. Presented by Miss Paula Ritter, Chicago, Ill. Received November 30, 1914. Quoted notes by Miss Ritter.

39465. BRASSICA RAPA L. Brassicaceæ. **Turnip.**

"*Man ching.* A good sweet turnip."

39466. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

"*Pai lo po.* Long white turnip, planted in spring, grows exceedingly large."

39467 and 39468. BRASSICA PEKINENSIS (Lour.) Skeels. Brassicaceæ. **Pe-tsai cabbage.**

"A large winter cabbage of the Chinese kind. Planted in summer, transplanted in early fall or late summer, and left out until frost."

39469 to 39473. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

39469. "*Ch'ang tsai kua.* A long thick cucumber."

39470. "*Yüan su kua.* Round cucumber."

39471. "*Pai ch'ang su kua.* A large, thick, white gourd, similar to the cucumber; good. Plant like cucumber."

39472. "*Huang kua.* A long, slight cucumber. Can be planted as in America; might be called seedless; very good."

39473. "*Ch'ang su kua.* A kind of cucumber."

39474. ALLIUM SCHOENOPRASUM L. Liliaceæ. **Chives.**

"*Chiu ts'ai.* A kind of onion grass."

39475. LACTUCA SATIVA L. Cichoriaceæ. **Lettuce.**

39476. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ. **Loofah.**

"*Ssŭ kua.* Long cucumberlike."

39477. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

39478. ALLIUM CEPA L. Liliaceæ. **Onion.**

"Long onion. Should be hilled."

39479. SESAMUM ORIENTALE L. Pedaliaceæ. **Sesame.**
(*Sesamum indicum* L.)

39465 to 39484—Continued. (Quoted notes by Miss Paula Ritter.)

39480. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"*Chun ta.* The heavy leaves are used as greens, something like spinach."

39481. DAUCUS CAROTA L. Apiaceæ. **Carrot.**

"Planted like ours and almost if not quite like some of our kinds."

39482. BRASSICA NAPUS L. Brassicaceæ. **Rapè.**

39483. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

"*Chi'eh tzŭ.*"

39484. CORIANDRUM SATIVUM L. Apiaceæ. **Coriander.**

"*Yen ts'ai.* A green like parsley."

39485. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Ceylon. Presented by Mr. C. K. Moser, American consul, Harbin, Manchuria. Received December 2, 1914.

"A few months before I left Ceylon a Singhalese friend sent me a few mangos which he called *coconut* mangos, which he said were from Jaffna and very rare. They were about as large as a coconut and similar in shape, the skin and flesh a deep, rich yellow, except upon the cheeks, where burned a blush as glorious as any that ever dyed a peach. They were the most delicious fruits my wife and I ever tasted in all our lives. We never saw either in India or Ceylon any others like them, and when I wrote to Jaffna I was informed they did not grow there, but that they were evidently a rare variety which seldom fruited in Ceylon and then only in certain localities. Unfortunately, I was too busy to investigate them, and I have forgotten the Singhalese name which Dr. Brown, of Jaffna, gave for them, but I saved the seeds, and under separate cover I am sending them to you in the hope that you may be able to plant them in Florida and grow trees from them. If you should do this and succeed with them, I wish to stipulate only one thing; that one tree belongs to me, and that I shall have its fruits some time. It is certainly not commonly known in the Middle East, and it certainly is a fruit for a king. It has neither fibrous flesh nor petroleum flavor; the fruits from which these seeds came were perfect." (*Moser.*)

39486 and 39487.

From Penang, Straits Settlements. Presented by the director, Penang Botanical Gardens. Received December 3, 1914.

39486. AMORPHOPHALLUS HAEMATOSPADIX Hook. f. Araceæ.

An araceous herb with short turbinate tubers, 2½ inches in diameter, 3-parted leaves 20 inches across, and oblanceolate leaflets. Peduncle brown, striated, terete. Sheaths appressed at the base, red-brown. Spathe 5 inches long; limb primrose yellow; tube striate with pink, dark purple within. Spadix sessile, 7 inches long, tip blood red. (Adapted from *Hooker, Flora of British India, vol. 6, p. 517.*)

39486 and 39487—Continued.

39487. ARISAEMA FIMBRIATUM Masters. Araceæ.

"*Arisaema fimbriatum* belongs to Engler's section *Trisecta*, having two stalked, leaves each deeply divided into three ovate-acute glabrous segments. The petioles are long, pale purplish rose colored, sprinkled with small purplish spots. The spathes are oblong acute or acuminate, convolute at the base, brownish purple, striped longitudinally with narrow whitish bands. The spadix is cylindrical, slender, terminating in a long whiplike extremity, much longer than the spathe. The flowers have the arrangement and structure common to the genus, the females being crowded at the base of the spadix, the males immediately above them, and these passing gradually into fleshy incurved processes, which in their turn pass gradually into long slender, purplish threads, covering the whole of the free end of the spadix." (*Masters. In Gardeners' Chronicle, 1884, vol. 2, p. 680.*)

39488. CARICA CANDAMARCENSIS Hook. f. Papayaceæ. Papaya.

From California. Presented by Mr. William A. Spinks, Monrovia, Cal. Received November 27, 1914.

"Seeds of a small-fruited papaya, from Spinks's ranch, near Duarte, Cal. The fruit itself of this variety seems to be worthless. It turns quite yellow on ripening." (*Spinks.*)

39489. BETULA JAPONICA Siebold. Betulaceæ. Birch.

From Hsiao Wutaishan, Chihli Province, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture.

Seeds collected from herbarium material carried under Meyer No. 1163.

"A tree ordinarily from 40 to 60, occasionally over 100 feet high, with a silvery white trunk; branches pendulous at the ends; young wood not downy, but furnished with glandular warts. Leaves broadly ovate, sometimes rather diamond shaped; 1 to 2½ inches long, three-fourths to 1½ inches wide; broadly wedge shaped or truncate at the base, slenderly tapered at the apex, doubly toothed; not downy, but dotted with glands on both surfaces; stalk one-half to three-fourths inch long. Fruiting catkins three-fourths to 1¼ inches long, one-third inch wide, cylindrical; scales smooth except on the margin; middle lobes the smallest. Native of Europe (including Britain), especially of high latitudes; also of parts of north Asia. This birch, with *B. pubescens*, forms the *B. alba* of Linnæus, but most authorities now concur in separating them. The species is easily distinguished from *B. pubescens* by the warts on the young branchlets and by the absence of down on all the younger vegetative parts. In the latter respect it differs from all the other cultivated birches except *B. populifolia*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 263,* under *B. verrucosa.*)

39490 and 39491.

From Funchal, Madeira. Presented by Mr. C. H. Gable, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received December 3, 1914.

39490. ANDROPOGON HIRTUS L. Poaceæ.

Distribution.—A perennial tufted grass about 3 feet high, found in the countries bordering on the Mediterranean and southward through Africa to the Cape of Good Hope.

39490 and 39491—Continued.

39491. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepensis* Pers.)

"Herbarium specimens show that the Madeira form differs usually in having dark purple panicles, and I think there might be other characters associated with this." (*Piper.*)

39492 and 39493.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, United States Army, retired. Received December 3, 1914.

"To be tried in Florida and California."

39492. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

39493. CARYOPHYLLUS JAMBOS (L.) Stokes. Myrtaceæ. **Rose-apple.**
(*Eugenia jambos* L.)

39494 to 39531. HORDEUM spp. Poaceæ. **Barley.**

From China. Presented by Mr. Thomas Sammons, American consul general, Shanghai, who secured it from the Special Envoy for Foreign Affairs. Received December 1, 1914.

39494 to 39496. HORDEUM VULGARE L.

39494. From Lanchi, Chekiang Province.

39495. From Sienku, Chekiang Province.

39496. From Fenghsien, Kiangsu Province.

39497. HORDEUM VULGARE COELESTE L.

From Lungchuan, Chekiang Province.

39498 to 39501. HORDEUM VULGARE L.

39498. From Jukao, Kiangsu Province.

39499. From Puchinghsien, Kiangsu Province.

39500. Early barley from Wuyi, Chekiang Province.

39501. From Shaohingfu, Chekiang Province.

39502. HORDEUM VULGARE COELESTE L.

From Changshan, Chekiang, Province. Used for food and for making a strong wine.

39503. HORDEUM VULGARE L.

From Siangshan, Chekiang, Province.

39504. HORDEUM VULGARE HIMALAYENSE Rittig.

From Yangchung, Chekiang Province.

39505. HORDEUM VULGARE COELESTE L.

White round barley from Yungkang, Chekiang Province.

39506 and 39507. HORDEUM VULGARE L.

39506. From Siangshan, Chekiang Province.

39507. From Paoshan, Kiangsu Province.

39508. HORDEUM VULGARE COELESTE L.

From Yunhwo, Chekiang Province.

39494 to 39531—Continued.

39509 to 39522. HORDEUM VULGARE L.

39509. From Juian, Chekiang Province.

39510. From Siangshan, Chekiang Province.

39511. From Sungkiangfu, Kiangsu Province.

39512. From Paoying, Kiangsu Province.

39513. From Sinchanghsien, Chekiang Province.

39514. From Sienku, Chekiang Province.

39515. From Wuyi, Chekiang Province.

39516. From Suianhsien, Chekiang Province.

39517. From Pingyanghsien, Chekiang Province.

39518. From Tientai, Chekiang Province.

39519. Superior grade from Shanghai, Kiangsu Province.

39520. From Kinhwafu, Chekiang Province.

39521. From Kunshan, Kiangsu Province.

39522. From Tinghai, Chekiang Province.

39523. HORDEUM VULGARE COELESTE L.

From Pingyanghsien, Chekiang Province.

39524 to 39531. HORDEUM VULGARE L.

39524. From Kiangpu, Kiangsu Province.

39525. From Chuhsien, Chekiang Province.

39526. From Iwu, Chekiang Province.

39527. From Yuhwanting, Chekiang Province.

39528. Red barley from Sinchanghsien, Chekiang Province.

39529. From Pinghu, Chekiang Province.

39530. From Pinghu, Chekiang Province.

39531. From Tinghai, Chekiang Province.

39532 to 39536. ALEURITES FORDII Hemsley. Euphorbiaceæ.

Tung tree.

From Experiment, Ga. Secured from the Agricultural Experiment Station. Received December 4, 1914.

39532. Fruit did not fall until nipped by light frost.

39533. Seed from 1-acre plat, row 5, tree 1. Large fruit, but a sparse bearer.

39534. One-acre plat, row 5, tree 7. Small prolific crop from one tree.

39535. Nut plat, row 2, tree 8. Fruit very large, but a sparse bearer; 14 pounds when harvested. Fruit matured and fell to the ground October 15 to 20, several days before frost.

39536. Mixed.

39537. LAVANGA SCANDENS (Roxb.) Buch.-Ham. Rutaceæ.

From Pusa, India. Presented by Mr. Bernard Coventry, agricultural adviser to the Government of India. Received December 9, 1914.

"A tall, lax-growing, but scarcely scandent shrub, with straggling branches, which are glabrous (as in every part of the plant), terete, bearing a rather

long subulate decurved spine in the axil of the leaf. Leaves alternate, remote, 3-foliolate. Petiole 2 to 3 inches long. Leaflets 5 to 6 inches long, lanceolate, acuminate, entire, penninerved, pellucido-punctate. Flowers axillary, fasciculate, in a dense short raceme, much resembling those of the orange and not less fragrant. Calyx monophyllous, forming a short cylinder, 4-lobed at the mouth. Petals white, fleshy, oblong, four times as long as the calyx, at length patent and even reflexed. Stamens eight, united into a white fleshy tube for nearly their whole length, the apices free, and bearing each a linear or oblong-acuminate yellow anther. Pistil as long as the stamens. Ovary seated on a fleshy torus. Style columnar. Stigma large, globose." (*Botanical Magazine, pl. 4522, 1850.*)

Introduced for the work of the Office of Crop Physiology and Breeding Investigations.

39538 to 39541. PYRUS spp. Malaceæ. Pear.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Cuttings received December 7, 1914. Quoted notes by Prof. Sargent.

39538. PYRUS BRETSCHNEIDERI Rehder.

"(No. 2.) 452–4. Raised from seed sent to the Arnold Arboretum from Peking, China, by Dr. Bretschneider. A pear with yellow, globose, juicy fruits, of fair quality, which we call *Pyrus bretschneideri*. Of great value as a decorative plant and, judging from the quality of the fruit, it has economic possibilities. I believe it is from this species that the best Chinese pears are derived."

39539 and 39540. PYRUS PHAEOCARPA Rehder.

"Raised from seed sent to the Arboretum from Peking, China, by Dr. Bretschneider. This species has very small brown fruit. Of great value as decorative plants."

39539. (No. 3.) 452–7. Fruit globose in form.

39540. (No. 4.) 452–9. Fruit pyriform.

39541. PYRUS OVOIDEA Rehder.

"(No. 5.) 4033. This is remarkable among pears in having ovoid, not obovoid, fruit. The fruit is of fairly good quality, and the tree has ornamental value on account of its large and abundant flowers and its good foliage which, unlike that of any other pear tree, turns to brilliant scarlet in the autumn. Judging by the shape of some of the Chinese fruits of which you have recently sent us photographs, this may be the origin of some of the cultivated Chinese pears. It is possible that one of the parents of the Kieffer pear may be this species. We know *P. ovoidea* only as a cultivated tree. It has long been cultivated in the Arboretum as *P. simonii*, under which name we had it from Kew, where in turn it had come from the museum in Paris. *P. simonii*, however, is a synonym of *P. ussuriensis*."

39542 and 39543.

From Littleriver, Fla. Presented by Mr. C. T. Simpson. Received December 2, 1914. Quoted notes by Mr. Simpson.

39542. ADENANTHERA PAVONINA L. Mimosaceæ. Circassian bean.

"A large tree from tropical Asia with dark-green bipinnate leaves and spiral pods of lenticular, brilliant red beans. These are used for food

39542 and 39543—Con. (Quoted notes by Mr. C. T. Simpson.)

by the natives of India and are strung into beautiful necklaces. The flowers are brownish, in long spikes. The tree is a rapid grower and is quite ornamental."

39543. KOPSIA ARBOREA Blume. Apocynaceæ.

"A large shrub or small tree belonging to the Apocynaceæ, with spatulate, thick, shining, dark-green leaves in whorls and small white flowers in clusters. These are followed by deep red, almond-shaped, nutlike fruits which are quite ornamental. It is a very handsome tree or large shrub, but it is very tender."

39544. AMYGDALUS sp. Amygdalacæ. **Wild peach.**

From near Chaoyu, near Luanfu, Shansi, China. Collected by Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 17, 1914.

"Dried fruits and stones of the real wild peach, collected at an elevation of 4,000 feet above the sea." (*Meyer.*)

39545. ORYZA SATIVA L. Poaceæ. **Rice.**

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American consul general. Received December 7, 1914.

"Information obtained from a rice dealer, whose principal house is in Moudania in the Vilayet of Broussa, shows that about 100 to 150 tons of rice is yearly grown in the district of Pazarkioi-Guemlek and about 150 to 200 tons in the Broussa district, but, owing to the increased amount sown, a crop of 400 tons is expected this year. All of the rice is consumed locally. It is described as being of better quality than that grown in Philippopolis, just across the Turkish frontier in Bulgaria, which is, I am told, very good rice. One kileh (20 okes = 56.40 pounds) of seed rice is usually sown on 3 deunums (2,569.44 square yards), producing 100 to 120 kileh (5,640 to 6,768 pounds) of good unshelled rice. Twenty okes (56.40 pounds) of unshelled rice yields 14 okes (39.48 pounds) of shelled rice. Sowing is usually done in the latter part of April and harvesting in August or the beginning of September. Rice grows in black, loose soil and is well watered by frequent rains as well as, lately, by irrigation canals which keep the soil damp. The cost of this rice, wholesale, is 3¼ to 3½ piasters ($0.143 to $0.154) per oke (2.82 pounds); unshelled rice can be bought for 55 to 60 paras ($0.0605 to $0.166) per oke (2.82 pounds). The past year it was sold for 3½ piasters ($0.154) per oke (2.82 pounds)." (*Ravndal.*)

39546. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received December 8, 1914.

Crystallina. "Noel Deerr in his 'Cane Sugar,' page 26, says that the *Crystallina* is a Batavian cane and is the lighter of the two purple Batavian canes. It is known in Hawaii as *Rose Bamboo*, in the British West Indies as *White Transparent*, in Cuba as *Cristallina*, and in Louisiana as *Home Purple*. It is of no distinct color, sometimes being a pale or ash color, and at other times a wine-colored cane. Its color depends upon its age and environments, the younger the cane the more color it contains, and the young parts of the same cane are more colored than the older parts. It is a comparatively thin cane, with long joints, and has a longitudinal channel running from the eye

to the next joint above. It is prone to fall down from the effects of high wind, is comparatively soft, and furnishes, when mature, a juice of high sucrose and purity. It is a comparatively hardy cane and will give remunerative crops on soils and under conditions where many other canes would fail. While not immune to the attacks of insects and diseases, it is among the canes which most successfully resist them." (*Crawley.*)

39547 and 39548. PYRUS BETULAEFOLIA Bunge. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Presented by Mr. Jackson Dawson, superintendent, Arnold Arboretum. Received December 8, 1914.

"*Pyrus betulaefolia* was obtained from Dr. Bretschneider from the mountains near Peking, China, and was sown at the Arboretum in 1882, so that our plants are about 31 years of age. (*Dawson.*)

"A slender, quick-growing, graceful tree, 20 to 30 feet high; young shoots covered thickly with a gray felt which persists the whole of the year. Leaves ovate or roundish ovate, 2 to 3 inches long, 1¼ to 1½ inches wide; long pointed, tapered or rounded at the base, regularly and sometimes rather coarsely toothed; downy on both surfaces at first, remaining so on the veins beneath throughout the season; dark green, smooth and lustrous above; stalk 1 to 1¼ inches long, gray felted like the shoot. Flowers 8 to 10 together in a corymb, white, each about three-fourths inch across, on a downy stalk three-fourths to 1 inch long; calyx downy, its short, triangular teeth falling away from the small roundish fruit, which is about the size of a large pea, grayish brown with white dots. Native of North China; introduced to Kew in 1882 through seeds sent by the late Dr. Bretschneider. The chief characteristics of the tree are its quick graceful growth and small fruits not crowned by calyx teeth. Its fruit would appear to be of no value, but the tree is used by the Chinese as a stock on which they graft fruiting pears." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 279.*)

39549. GARCINIA CORNEA L. Clusiaceæ.

From Bronx Park, New York City. Presented by the New York Botanical Garden. Received December 11, 1914.

See S. P. I. Nos. 11721 and 23882 for previous introductions and descriptions.

39550. CASTANEA sp. Fagaceæ. **Chestnut.**

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received December 10, 1914.

"Collected inside the city of Nanking, fall of 1914." (*Bailie.*)

39551. DIMOCARPUS LONGAN Louriero. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Oneco, Fla. Presented by Reasoner Brothers. Received December 11, 1914.

39552 and 39553.

From Sibpur, Calcutta, India. Presented by Maj. A. T. Gage, superintendent, Royal Botanic Gardens. Received December 12, 1914.

39552. LAVANGA SCANDENS (Roxb.) Buch.-Ham. Rutaceæ.

See S. P. I. 39537 for previous introduction and description.

39553. MANGIFERA SYLVATICA Roxb. Anacardiaceæ.

Distribution.—A large tree found on the tropical slopes of the Himalayas and in the Khasi Hills, in India.

39554 and 39555.

From Goleta, Cal. Presented by Mr. Joseph Sexton. Cuttings received December 12, 1914. Quoted notes by Mr. Peter Bisset.

39554. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"The parent tree bears staminate flowers in great profusion, as well as pistillate ones; therefore it is valuable as a pollinator for orchards of *kaki* varieties that do not bear staminate flowers. Fruits small to medium in size."

39555. FEIJOA SELLOWIANA Berg. Myrtaceæ. **Feijoa.**

"Cuttings from a variety bearing fruits about 2½ inches in length by 1½ inches in diameter and of excellent quality."

39556 to 39559.

From California. Received at the Plant Introduction Field Station, Chico, Cal. Quoted notes by Mr. Peter Bisset.

39556. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"Scions collected on the place of Mr. K. Stevens, Santa Barbara, Cal., from a tree bearing staminate flowers in abundance, as well as pistillate ones. Will be of value as a pollinator for nonstaminate varieties. Fruits small, but produced in profusion."

39557. CRATAEGUS LAVALLEI F. Herincq. Malaceæ. **Hawthorn.**

"Scions received from Mr. Frank J. Hart, Los Angeles, Cal. A small shrubby tree growing to 20 feet in height, bearing bright orange-colored fruits."

39558. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

"Seeds received from Mr. C. W. Beers, horticultural commissioner, Santa Barbara, Cal. Gathered from trees growing in that vicinity. Will be used to grow stocks on which to bud the improved varieties of carobs."

39559. TAMARIX sp. Tamaricaceæ. **Tamarisk.**

"Cuttings of an undetermined variety received from Mr. M. H. Crawford, Del Mar, Cal. The parent tree was about 12 feet in height, the branches long and slender, leaves long and grayish green, giving a plume-like effect."

39560 and 39561. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Bie, Angola, Africa. Presented by Mr. W. H. Sanders, American Board of Missions. Received December 10, 1914.

39560. Brown.

39561. White.

39562. ALEURITES MONTANA (Lour.) Wilson. Euphorbiaceæ.

Mu-yu tree.

From Takhing, South China. Presented by Rev. J. K. Robb, American Reformed Presbyterian Church. Received December 10, 1914.

See S. P. I. No. 36897 for previous introduction and description.

39563. SPONDIAS LUTEA L. Anacardiaceæ.

From Bogota, Colombia. Procured through Mr. F. L. Rockwood, clerk of the American Legation. Received December 10, 1914.

"A fruit which is in the market about 3 months of the year. It is reddish yellow, grows on a small tree, like cherries on a small scale. It has never been cultivated, but has a very large seed and a pleasant, slightly acid taste, and the market name is *ciruelas*, which is Spanish for 'plums.' They are about three-fourths of an inch long and oblong in shape, a very handsome fruit. The season lasts only from June to September. This class of fruit is abundant in the valleys of the Andes in a warm climate where the temperature is from 70° to 80°, and it seems to do best below the coffee belt in valleys where it is shaded and well watered. The fruit is very popular in this market, especially among the children, and seems very healthful to use. The price is higher in proportion to other tropical fruits in the Bogota market, owing to the fact that none is cultivated and dependence is placed upon the wild crop only. This fruit is said to counteract the eating of too much meat." (*Rockwood.*)

39564. COUEPIA POLYANDRA (H. B. K.) Rose. Rosaceæ.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 10, 1914.

39565. COBAEA sp. Polemoniaceæ.

From Guatemala City, Guatemala. Presented by Dr. R. Tejada A. Received December 2, 1914.

"Received from the Helvetia estate, situated in the jurisdiction of San Felipe, Retalhuleu, 2,500 feet." (*Tejada.*)

39566. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

Seed received through Mr. G. P. Rixford, grown at the Plant Introduction Field Station, Chico, Cal.

South African melon seed, purchased in the San Francisco market. (P. L. H. No. 6117.)

39567. ANNONA DIVERSIFOLIA Safford. Annonaceæ. **Ilama.**

From San Salvador, Central America. Presented by Mr. Ralph D. Cornell, Claremont, Cal., through Mr. Wilson Popenoe, of the Bureau of Plant Industry. Received December 15, 1914.

"Called *Anona blanca* by the natives."

According to Mr. W. E. Safford (*Contr. from the U. S. National Herbarium, vol. 18, pt. 1, p. 19–20*), this interesting and valuable anona is called *ilama* at Colima, Tlatlaya, and Acapulco in southern Mexico. Mr. Safford describes the fruit as large, fleshy, and aromatic, with the juicy pulp frequently pink or rose tinted. It is shaped like a pineapple cheese and is usually covered with large stout protuberances, though sometimes they are lacking in fruits of the same tree. Undoubtedly this is one of the best of the anonas, though rare and little known. It should be given a careful trial in southern Florida and southern California.

39568. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. **Wampi.**
(*Clausena wampi* Oliv.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, Hawaii Experimental Station. Received December 15, 1914.

"This tree is rather rare in Hawaii, but is an interesting species, and I consider it worthy of limited cultivation." (*Higgins.*)

"A small tree, 18 to 20 feet, with luxuriant foliage, native of South China; nearly glabrous pinnate leaves; small dense panicles of whitish sweet-scented flowers, produced in April; fruit ripens in June and July; an edible berry, borne in clusters like the grape, individual fruit nearly globose, the size of a large marble, rough, tough, orangelike rind, pale straw yellow in color and covered with glands full of green balsamic oil; seeds 1 to 3 nearly filling the fruit cavity; a small quantity of almost colorless juicy pulp between the seeds and the rind, with an agreeable, aromatic acid taste. Propagated by seeds and layers. Often used as a dessert fruit, but mostly for preserves. The leaves are used in flavoring." (*Report of the Hawaii Agricultural Experiment Station, 1914, p. 33.*)

39569. AMPELOPSIS MEGALOPHYLLA Diels and Gilg. Vitaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Cuttings received December 17, 1914.

See S. P. I. No. 34537 for previous introduction and description.

39570. CASTANEA sp. Fagaceæ. **Chestnut.**

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received December 17, 1914.

39571. MYRISTICA MALABARICA Lamarck. Myristicaceæ. **Kánagi.**

From Bombay, India. Presented by Mr. V. I. Parekh. Received December 14, 1914.

"Jangli candle seeds, which can be obtained from Indian jungles, but are generally neglected. The oil extracted is used for burning purposes only. It contains a resinous substance, very sticky, and expected to turn out to be of some use in preparing alizarine colors or mordant, being oily. Can be had in large quantity if collected at the proper time, at a very small cost." (*Parekh.*)

"A large tree of the western coast from the Konkan southwards in evergreen forests. The seed yields a yellowish oil when bruised or boiled. It is used medicinally and for illumination. The fruit appears to have been used for adulterating the nutmegs and mace of *M. fragrans*. The wood is moderately hard and used in building." (*Watt, Commercial Products of India.*)

39572. CRATAEGUS ARNOLDIANA Sargent. Malaceæ. **Hawthorn.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 17, 1914.

To be grown as stocks. For previous introduction, see S. P. I. No. 34782.

39573. GARCINIA MULTIFLORA Champion. Clusiaceæ.

From Kiayingchow, China. Presented by Rev. George Campbell. Received December 17, 1914.

"*Shan pi pa.* Dr. Chang sent me these fruits and added a note to the effect that people said the fruit is entirely wholesome. It has a pleasant subacid taste, something like an orange, but there is little meat. From a bush with deeply lobed leaves." (*Campbell.*)

39574 and 39575. BERBERIS spp. Berberidaceæ. **Barberry.**

From Elstree, Herts, England. Presented by Hon. Vicary Gibbs, Aldenham House Gardens. Plants received December 21, 1914.

39574. BERBERIS AGGREGATA Schneider.

"This is one of Wilson's recent introductions from China, and was shown (at a Royal Horticultural Society show) as a richly berried, open-spreading bush about 18 inches high. The leaves, dull green above and gray green below, are in axillary rosettes of about nine. They vary from ovate and entire to oblanceolate, with a few teeth or spiny hairs on the upper half, and are generally about one-half by one-fourth inch. The berries are small, nearly globular, and borne in dense close-seated clusters, in one of which we counted as many as 21 berries, though there are, more generally, only half that number. They are a very charming creamy green color, suffused with coral, and reminding one of those of *B. wilsonae.*" (*Gardeners' Chronicle, September 27, 1913.*)

39575. BERBERIS SUBCAULIALATA Schneider.

"A deciduous shrubby western Chinese barberry with strongly angulate branches, oblanceolate leaves, one-half to 1 inch long, acute, rarely 3-pointed at the apex, whitish beneath; flowers in very short 6 to 8 flowered racemes or rarely fascicled, nodding. Fruit globose, red." (*Rehder. In Bailey, Standard Cyclopedia of Horticulture.*)

See S. P. I. No. 37497 for previous introduction.

39576. QUERCUS CYCLOBALANOIDES Trelease. Fagaceæ. **Oak.**

From Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received December 21, 1914.

"Fine, large tree, which has, as I am told, a most excellent wood. The oak will grow well in your colonies, Porto Rico, or the Philippines." (*Purpus.*)

39577. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Hawthorn.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 21, 1914.

39578. ALSOPHILA sp. **Tree fern.**

From Baguio, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao, Bataan. Received December 19, 1914.

"This is a tree fern, attaining a height of about 20 feet, with slender stem and very graceful, growing between 3,000 and 4,000 feet altitude. The stems are now being utilized by the Bureau of Education at their trade school in

Baguio in making flower stands, picture frames, and various small, useful, and ornamental articles for the office or the home, which are really ornamental, picturesque, and distinctly different from anything in that line that I have ever seen. The plants are very abundant, and if the stems would ship successfully and the plants later could be sold at a price that would be remunerative to the importer, you would gain an ornamental that in its line would be second to none." (*Wester.*)

39579 to 39581. CITRUS spp. Rutaceæ.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received December 19, 1914. Quoted notes by Mr. Webster.

39579. CITRUS GRANDIS (L.) Osbeck. **Panuban.**
(*Citrus decumana* Murr.)

"*Panuban.* An oblate fruit the size of a large orange, smooth, of the same color as the pummelo, thin skinned, juicy, and well flavored. I have not seen the trees, but believe it to be a hybrid between the pummelo and the orange or mandarin."

"A spiny tree, 3 to 4 meters tall, of robust growth; young growth pubescent; leaves 12 to 17 centimeters long, 4.7 to 8 centimeters wide, oblong ovate, crenate, coriaceous; base rounded; petiole 15 to 23 millimeters long, wing margins narrow, at most 18 millimeters broad, and cuneiform; flowers not seen; fruit 5.7 centimeters long, 7 centimeters in transverse diameter; oblate with shallow apical cavity; surface smooth, lemon yellow; skin very thin; pulp contained in 11 to 12 locules, yellowish, fairly juicy, subacid, acidity and sweetness well blended, aromatic and well flavored; seed large, polyembryonic. The *panuban* is said to bloom about New Year, and the fruit ripens in September to November; the trees are reported to be very prolific. The *panuban* has been reported only from Lias, Bontoc, where half a dozen trees are said to grow. Possibly it may be an accidental hybrid between the pummelo and the orange or mandarin; if it is simply a mutation it is one of the most striking of the species. However this may be, the pummelo character is strongly dominant in both the foliage and the fruit. Very well flavored, the fruit is too dry to be acceptable to a discriminating public, but it is not improbable that under cultivation the juiciness would increase. In such a case the *panuban* might become a fruit of commercial importance." (Adapted from *Philippine Agricultural Review, vol. 8, first quarter, 1915, p. 12.*)

39580. CITRUS MEDICA ODORATA Wester. **Tihi-tihi.**

"*Tihi-tihi,* the leaves of which analyze 0.6 per cent of essential oil. The plant is a shrub, fruiting three years from seed; the fruit is of no value.

"A small, thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; young growth bright green; leaves 7.5 to 11 cm. long, 4.3 to 6.5 cm. broad, elliptical, rather thick and leathery, serrate, of distinct fragrance; base rounded; apex notched; petioles very short, 4 to 6 mm. long, not winged; flowers one to four, in axillary compressed cymes, sessile, rarely exceeding 38 mm. in diameter; calyx large, prominently cupped; petals four to five, fleshy, white, with a tinge of purple

39579 to 39581—Continued. (Quoted notes by Mr. P. J. Wester.)

on the outside; stamens 36 to 42, unequal, shorter than stigma; filaments united in groups of four to six; pollen abundant; gynœcium frequently aborted; ovary elevated on a bright green disk, large, 4 mm. long, 13 to 14 loculed; style tapering from ovary, scarcely more slender, rather short; stigma large, knoblike, and cleft; fruit 60 to 65 millimeters long, 7 to 10 cm. in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammillate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised; skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis, Mindanao. The plant is very precocious, fruiting as early as the third year from seed, everbearing. The fruit is used by the Filipinos in washing their hair. It is not eaten, and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron." (*Citrus Fruits in the Philippines, Agricultural Review, first quarter, 1915.*)

39581. CITRUS MEDICA NANA Wester.

"Seeds of a lemon that fruits the second year from seed and is exceedingly prolific. The fruit is dry and seedy, but the variety might be useful in hybridization work for the production of very dwarf and precocious varieties."

39582. ALEURITES FORDII Hemsley. Euphorbiaceæ. **Tung tree.**

Grown at the Plant Introduction Field Station, Rockville, Md., under station No. 6587.

Plants grown from seed received from Mr. S. H. Gaitskill, McIntosh, Fla., from trees growing on his place, which were sent to him by the Office of Foreign Seed and Plant Introduction.

39583. CASIMIROA EDULIS La Llave. Rutaceæ. **White sapote.**

Grown at the Plant Introduction Field Station, Miami, Fla.

Plants grown from seed of selected fruits taken from a tree growing at the station, Miami, Fla.

39584. LAUROCERASUS ILICIFOLIA (Nutt.) Roemer. Amygdalaceæ. (*Prunus ilicifolia* Walp.)

Plants grown at the Plant Introduction Field Station, Chico, Cal.

"An evergreen tree, attaining a height of 30 feet and forming a dense crown. Leaves hollylike, thick and shiny. Tree bears small, white flowers in slender racemes less than 2 inches long; red or black fruits, one-half inch in diameter, of a pleasant subacid flavor, but somewhat astringent. Trees suitable for hedges." (*Peter Bisset.*)

38585 and 39586.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 24, 1914.

To be grown as stocks.

39585. CRATAEGUS LAUTA Sargent. Malaceæ. **Hawthorn.**

"A spiny arborescent shrub, allied to *C. ellwangeriana*, with ovoid fruit, bright orange-red, three-quarters of an inch long. Much planted in Boston parks, but of unknown origin." (*Rehder. In Bailey, Standard Cyclopedia of Horticulture.*)

39586. KALOPANAX RICINIFOLIUS (S. and Z.) Miquel. Araliaceæ. (*Acanthopanax ricinifolium* Seem.)

See S. P. I. Nos. 20312 and 34783 for previous introductions and description.

39587 and 39588. HOLCUS spp. Poaceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received December 21, 1914. Quoted notes by Dr. Trabut.

39587. HOLCUS HALEPENSIS × SORGHUM.

"Var. *annuum*. Called *Mezera* by the natives. 1914."

39588. HOLCUS HALEPENSIS × SORGHUM.

"Described as a variety cultivated in the same region which hybridizes with *H. halepensis* and gives the *Mezera*, but under cultivation apparently a hybrid between Johnson grass and sorghum."

39589. PHASEOLUS MUNGO L. Fabaceæ. **Urd.**

From Manila, P. I. Presented by Mr. William S. Lyon. Received December 19, 1914.

"Seeds of a native Phaseolus. I lay no claim to its virtues as a seed producer; indeed I have it growing side by side with a number of other species, and I find it relatively inferior as such, but as a cover crop I have wholly discarded all of the scores of leguminous plants I have tested in favor of this. I have made distribution of the seeds to a number of abaca planters and they are most enthusiastic over its utility in young hemp plantations. Like myself, they all have come to discredit cowpeas and all velvet beans, *Lyon* included, for the reason that in good soils the growth of the cover crop is so exuberant that except at great outlay for labor any plants under 1 meter tall are smothered out of existence. On the other hand, in old plantations which are fairly well shaded the cowpeas and velvet beans make a spindling and inefficient growth to accomplish the main purpose of choking out a number of objectionable weeds and grasses which, notwithstanding the shade, flourish to the detriment of the abaca. I have more than an acre now in my rose garden and for two seasons have grown this bean to the exclusion of all others. It makes a low, dense, spreading mat about a foot thick and not much disposed to climb; the result is I am able to plant two crops a year among my dwarf rose bushes without choking them, with a marked saving in cultivation and irrigation, as well as a marked improvement in the quantity and quality of the flowers obtained." (*Lyon.*)

39590 and 39591. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Maison Carree, Algeria. Presented by Mr. I. Ducellier, Algerian Agricultural School. Received December 10, 1914.

"Square barley."

39590. From the valley of the Cheliff.

39591. Grown on the high plateau of the valley of Constantine.

39592. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Barquisimeto, Venezuela. Through Mr. Thomas W. Voetter, American consul, La Guaira. Received December 22, 1914.

"This seed was grown near Barquisimeto, in the Puerto Cabello consular district. I have been able to learn of no other vicinity in Venezuela besides this where barley is grown." (*Voetter.*)

39593. ROSA ODORATA GIGANTEA (Collett) Rehder and Wilson. Rosaceæ. **Rose.**

From Hollywood, Cal. Presented by Mr. E. D. Sturtevant. Received December 24, 1914.

See S. P. I. Nos. 27301 and 28030 for previous introductions and description.

"The giant rose of the Himalayas (*Rosa gigantea*) probably has larger flowers than any other wild rose in existence. In their native forests the flowers often reach a diameter of 6 inches; cultivated they should exceed this. The rose is furthermore a vigorous grower. It was introduced to the United States in 1902 by the Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture, and on a number of occasions since then, and it at once attracted the interest of hybridizers, who try to retain its size and vigor while increasing its hardiness by crossing with a more cold-resistant specimen. Dr. F. Franceschi, of Santa Barbara, Cal., has made several hybrids which showed vigor and hardiness as well as great beauty, the flowers being creamy white with yellow centers. At the Botanic Gardens in Lisbon, Portugal, it has been crossed with the well-known rose Reine Marie Henriette, and large, rich, orange-yellow flowers produced. In warmer regions, such as California, the Southern States, and the Riviera of the Mediterranean, it is cultivated for its own sake, and its flowers, sometimes not borne very profusely, are often pure gold in color. Sir Joseph Hooker mentions a red form in Sikkim, India, but the best known type is white. Its fruit, as large as a small apple, is edible and sometimes sold in the Indian markets. The bush often makes a growth of 40 feet or more, dropping its blossoms (which at a short distance look like clematis) from the tops of tall trees in upper Burma and western China. It flourishes best in shade." (*American Breeders' Magazine, vol. 4, p. 108–109, 1913.*)

39594 to 39609.

From Shiraz, Persia. Presented by Col. J. N. Merrill. Received December 21, 1914. Quoted notes by Col. Merrill.

39594. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"No. 1. Sorghum corn from Goshne Kon."

39595. HORDEUM DISTICHON L. Poaceæ. **Barley.**

"No. 2. Barley from Fariab."

39594 to 39609—Continued. (Quoted notes by Col. J. N. Merrill.)

39596. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"No. 3. Sorghum of Shiraz."

39597. HORDEUM DISTICHON L. Poaceæ. **Barley.**

"No. 4. Barley from Mardasht. This is dry cultivated, i. e., gets very little water."

39598 and 39599. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

39598. "No. 5. Wheat from Fariab."

39599. "No. 6. Wheat of Mardasht. Dry cultivated, getting very little water."

39600. PANICUM MILIACEUM L. Poaceæ. **Millet.**

"No. 7. Millet from Koshkehidak."

39601 and 39602. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

39601. "No. 8. Wheat from Siyakh."

39602. "No. 9. Wheat from Bavanat."

39603. ORYZA SATIVA L. Poaceæ. **Rice.**

"No. 10. Rice from Deh Noo."

39604 to 39606. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

39604. "No. 11. Wheat from Ramjerd."

39605. "No. 12. Wheat from Garm Sir; Garm Sir means the warm country and refers to the part of Fars Province where the nomad tribes go to spend the winter; it is not far from the Persian Gulf."

39606. "No. 13. Wheat from Sarhad."

39607 to 39609. ORYZA SATIVA L. Poaceæ. **Rice.**

39607. "No. 14. Rice from Shames Abad."

39608. "No. 15. Rice from Ali Abad."

39609. "No. 16. Rice from Gel Khan."

39610 to 39617. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.
Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Received December 31, 1914. Quoted notes by Mr. Roig.

"These varieties have been planted from vines in average soil, unfertilized and not irrigated except at the time of planting. The yield notes accompanying each variety have been obtained from the following calculation based on the result of the crop this year. The varieties have been planted three times successively at the station and the tubers tested as many times. The vines were planted at the distance of 33 cm. between plants and 1 meter between rows, which makes three plants per square meter, that is, 402,000 plants in a caballería, a Cuban land measure equivalent to 33⅓ acres. I have assigned 400,000 plants in round numbers to each caballería. Sweet potatoes are com-

monly planted in Cuba at the distance of 30 cm. between plants and one Cuban vara (848 mm.) between rows. The prices here at present are 30 cents to the arroba (25 pounds) as sold to the dealer by the guajiros (peasants). The dealer sells the sweet potatoes at 2 cents per pound. The numbers of the varieties refer to my collection. The time for each to mature is six months."

39610. "No. 189. *Sapotillo*, yellow inside. From El Caney, Oriente; 20,869 arrobas per caballería."

39611. "No. 107. *San Juan*, white. From Zarzal, Oriente; 36,051 arrobas per caballería."

39612. "No. 126. *Martinica morado*. From Bayamo, Oriente; 83,478 arrobas per caballería."

39613. "No. 20. *Brujo morado*, yellow inside. From Cienfuegos, Santa Clara; 7,192 arrobas per caballería; June."

39614. "No. 28. *Disciplinado colorado*, white. From Camaguey; 33,285 arrobas per caballería."

39615. "No. 148. *Jiguani*, white inside. From Jiguani, Oriente; 33,964 arrobas per caballería."

39616. "No. 33. *Centauro amarillo*, pale yellow. From Camaguey; 23,130 arrobas per caballería. To this variety a prize was awarded in the Camaguey Agricultural Exhibition."

39617. "No. 229. *Amarillo*, pale yellow. From Camaguey; 32,800 arrobas per caballería."

39618. CASTANEA sp. Fagaceæ. **Chestnut.**

From Songdo, Chosen (Korea). Presented by Rev. C. H. Deal, Anglo-Korean School. Received December 28, 1914.

39619. CLEMATIS sp. Ranunculaceæ. **Clematis.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 10, 1914.

Arnold Arboretum No. 7391.

39620. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

From Mobile, Ala. Presented by Mr. Marsena A. Parker. Received December 2, 1914.

"The largest of the fruits weigh 1¼ to 1½ pounds and are about the size of an average grapefruit; skin is yellow with occasionally a brownish spot; seeds are pink; and the flavor is good, rather sweet, and when fully ripe, just as they burst open, extremely sweet."

39621. PRUNUS SERRULATA Lindl. Amygdalaceæ.

Flowering cherry.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co., Ltd. Received December 29, 1914.

For previous introduction, see S. P. I. No. 32860.

"Seeds of the wild cherry of Japan upon which the Japanese graft their flowering cherries. The Yokohama Nursery Co. is authority for the statement that this wild cherry can be reproduced very easily from cuttings and that the scions of many varieties are grafted on it and not budded, as is the custom in

this country with the flowering cherries. It has been suggested that this new stock may possibly be easier to cultivate than the mazzard or mahaleb seedlings which are now in use and the propagating work done in the winter on the bench instead of in the field. The difficulty in getting a stock that is large enough to bud in regions where the leaf-blight seriously attacks the mazzard or mahaleb seedlings has suggested a trial of this Japanese wild cherry, which is quite immune to the leaf-blight and which possibly may be a way out of this difficulty Recent tests in this country have shown that this wild form strikes root readily in sand." (*Peter Bisset.*)

39622 to 39625.

From Bogota, Colombia. Presented by Señor Jorge Ancizar. Received December 30, 1914. Quoted notes by Señor Ancizar.

39622. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

39623. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn.)

39624. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

"Small potatoes that come much earlier than any other potatoes and are very much appreciated here. They are yellow inside."

Tubers.

39625. CEREUS sp. Cactaceæ. **Pitahaya.**

"*Pitahaya*, a kind of creeping cactus that bears a beautiful large white flower and gives a very nice fruit; to be eaten with a little sugar and wine sometimes."

Cuttings.

39626. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Gardens. Received December 26, 1914.

"From eastern tropical Africa; it is a fine climbing plant with fiery orange-red flowers." (*Buysman.*)

"The flowers are clear orange color, about 1¼ inches in diameter. They rise solitary from the leaf axils of the prostrate growths on erect 3-inch purplish pedicels, and burst through one side of the balloonlike paired and united crimson-stained bracts. The leaves are opposite, about an inch long, triangular, firm textured, and glossy above. Introduced from British East Africa." (*Gardeners' Chronicle, May 17, 1913.*)

39627 to 39630.

From Petrograd, Russia. Presented by the director, Imperial Botanic Garden. Received December 28, 1914.

39627 to 39629. TAMARIX spp. Tamaricaceæ. **Tamarisk.**

39627. TAMARIX KARELINI HIRTA Litv.

From Turkestan.

39628. TAMARIX PENTANDRA Pallas.

Var. *brachystachys*. On clayey deserts, Farab, Bokhara, Turkestan, October 23, 1914. Collected by Mr. H. B. Androsov.

39627 to 39630—Continued.

The species is described as "A deciduous shrub or small tree, ultimately from 12 to 15 feet high, or upward, with long, slender plumose branches. Leaves very small, pointed, the largest one-eighth inch long, arranged at intervals along the flowering shoots; the smallest one-fifth as large and crowded 50 or more to the inch. Flowers arranged densely in slender, sometimes branching racemes, 1 to 5 inches long, each tiny blossom one-eighth inch across, rosy pink; they cover the whole terminal part of the current year's shoot, which is thus transformed during August into a huge plumelike panicle of blossom as much as 3 feet long. Sepals, petals, and stamens all 5 in number. Native of southeastern Europe and Asia Minor, especially on the banks of tidal rivers. This beautiful tamarisk is quite hardy and one of the most pleasing of late-flowering shrubs. It should be planted in groups large enough for its soft, rosy plumes to produce an effect in the distance. To obtain it at its best, it is necessary to cut it back every winter almost to the old wood. It then sends up the long slender branches which flower for six weeks or so in August and September. It is propagated with the greatest ease by making cuttings, 6 to 9 inches long, in early winter of the stoutest part of the season's growth, and putting them in the ground out of doors, like willows. It has been called a variety of *T. hispida*, but that species is very distinct in its downy twigs and leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 575–577.*)

39629. TAMARIX FLORIDA ALBIFLORA Bunge.

Edge of sandy deserts, Farab, Bokhara, Turkestan, October 14, 1914. Collected by Mr. H. B. Androsov.

39630. MYRICARIA GERMANICA (L.) Desv. Tamaricaceæ.

A shrub from 6 to 8 feet high, with very narrow flat leaves, and spikes of pink flowers, indigenous through most parts of Europe and the Caucasus and extending into the Himalayas. This species belongs to a genus separated from Tamarix and containing those plants of the order Tamaricaceæ which have 10 stamens and feathery seeds inserted in the middle of the valves of the capsule. The stems of this species are slender, striate, glaucous green when young and the leaves are linear lanceolate. Racemes 1 to 18 inches long, spiked, lateral or terminal, and the bracts have broad membranous margins. The branches of this species are employed in the Himalayas as a fodder for sheep and goats and the wood, which is hard and of a whitish color, is used for fuel. (Adapted from *Hooker, Flora of British India, Watt, Dictionary of the Economic Products of India,* and *Lindley, Treasury of Botany.*)

39631 to 39634.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received December 31, 1914. Quoted notes by Mr. Bailie.

39631. ZANTHOXYLUM BUNGEI Planchon. Rutaceæ.

"*Hua chiao.* Leaves of shrub and seeds used in flavoring."

39632. SOLANUM DULCAMARA L. Solanaceæ.

"A perennial vine of the nightshade family, with beautiful red berries that make the hedges look ornamental."

39631 to 39634—Continued. (Quoted notes by Rev. Joseph Bailie.)

39633. CLEMATIS sp. Ranunculaceæ. **Clematis.**

"Purple mountain clematis."

39634. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"Red-berried shrub having flowers like those of woodbine or honeysuckle. Shrub just now (November 21) is beautiful with red berries."

39635. ALEURITES FORDII Hemsley. Euphorbiaceæ. **Tung tree.**

From Riverside, Cal. Presented by Mr. Fred M. Reed. Received at the Plant Introduction Field Station, Chico, Cal., December 30, 1914.

"Being on a main-traveled road and a strange-looking tree, they attract a great deal of attention, and people carry them off as curiosities and occasionally eat them." (*Reed.*)

39636 to 39660.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received December 15, 1914.

39636. ALBIZZIA LEBBECK (L.) Benth. Mimosaceæ. **Lebbek.**

See S. P. I. Nos. 9038 and 18509 for previous introductions and description.

"This tree, which is used in Reunion as a shade crop for coffee, bears the names there of *noir blanc, noir rouge;* its wood is white, with red, brown, or reddish black heart, solid, well veined, and gives good knees for boat building; it is employed in turnery, cabinetmaking, and for wheelwright work. Exposed to the weather it does not last more than 10 or 15 years. The trunk yields a gum analogous to gum arabic. In Senegal the astringent bark and seeds are employed for diarrhea, dysentery, and hemorrhoids. The oil extracted from the seeds is used for leprosy. The flowers are emollient and applied in cataplasms for boils, etc." (*De Lanessan, Les Plantes Utiles des Colonies Françaises.*)

39637. ANTHOCEPHALUS CADAMBA (Roxb.) Miquel. Rubiaceæ.

"A large deciduous tree, wild in northern and eastern Bengal, Pegu, and the western coast; cultivated in northern India. During the first two or three years it grows very fast, about 10 feet a year, the girth increasing at the rate of 1 inch a month. After 10 or 12 years the growth becomes very slow. The bark is used medicinally as a febrifuge and tonic. The fruit is eaten, and the foliage is sometimes used as fodder for cattle. The wood is white, with a yellowish tinge, soft and evenly grained, and much used for building purposes. This species is cultivated for ornamental purposes and for the grateful shade its large, coarse foliage affords." (*Watt, Dictionary of the Economic Products of India.*)

39638. BOEHMERIA RUGULOSA Weddell. Urticaceæ.

"A small tree with grayish-brown branches met with in Garhwal, Kumaon, Nepal, Sikkim, and Bhutan. The wood is of a reddish color, moderately hard, evenly grained, durable, and seasons well. It weighs about 41 pounds per cubic foot and is very easily worked. It is used in the manufacture of bowls, milk pails, churns, cups, and tobacco boxes." (*Watt, Dictionary of the Economic Products of India.*)

39636 to 39660—Continued.

39639. BUCKLANDIA POPULNEA R. Brown. Hamamelidaceæ.

"A large evergreen tree attaining a height of 80 feet, met with in the eastern Himalayas, Khasi Hills, and the Hills of Martaban, from 3,000 to 8,000 feet above the level of the sea. The wood is a grayish brown, rough, moderately hard, close-grained, and durable. It is extensively used in Darjiling for planking and for door and window frames." (*Watt, Dictionary of the Economic Products of India.*)

39640. CASSIA LAEVIGATA Willd. Cæsalpiniaceæ.

See S. P. I. No. 3324 for previous introduction.

"A glabrous shrub native of the American Tropics, with 3 to 4 pairs of ovate-oblong or ovate-lanceolate acuminate leaflets, and yellow flowers in terminal or axiliary racemes. Pod leathery, 2 to 3 inches long, nearly cylindrical." (*Bailey, Standard Cyclopedia of Horticulture.*)

39641. DICHROA FEBRIFUGA Loureiro. Hydrangeaceæ.

"A somewhat virgate, rare greenhouse shrub, 5 to 9 feet tall, with lanceolate or obovate-lanceolate leaves 8 inches long and glabrous except on the nerves. In habit this species resembles a hydrangea, with violet-blue flowers in pyramidal panicles a foot across and handsome blue berries. The genus Dichroa consists of a single species and is found in the Himalayas, Malaya, and China, occurring in the temperate Himalayas at altitudes between 5,000 and 8,000 feet. Some authorities state that the Chinese form has larger flowers than this Indian one." (*Bailey, Standard Cyclopedia of Horticulture.*)

39642. EDGEWORTHIA GARDNERI (Wall.) Meissn. Thymelaeaceæ.

See S. P. I. Nos. 9162 and 23754 for previous introductions and description.

"A large bush found in the Himalayas at between 4,000 and 9,000 feet elevation. The strong, tough fiber obtained from the long, straight, sparsely branched twigs of this bush must, sooner or later, become one of the most valuable of Indian fibers. The finest qualities of Nepal paper are made from this plant, which produces a paper whiter than that obtained from *Daphne cannabina.*" (*Watt, Dictionary of the Economic Products of India.*)

39643. FICUS HOOKERI Miquel. Moraceæ.

"A tree with all its parts glabrous; leaves thinly coriaceous, long petiolate, broadly elliptic or subovate elliptic, with short, broad, blunt apical cuspis, edges entire, base rounded or slightly narrowed, 3-nerved; lateral nerves six to eight pairs, not very prominent; under surface pale; length 5 to 11 inches; stipules linear lanceolate, flaccid, 1.5 to 3.5 inches long, caducous; receptacles axillary, in pairs, sessile, obovate, depressed, when ripe from 0.5 to 1 inch across; the large basal bracts united to form an entire cartilaginous cup which envelops the lower third of the ripe receptacle; male flowers numerous, scattered, with no proper perianth, stamen single on long filament which is embraced by the lanceolate scales of the receptacle; gall and fertile female flowers alike, except as regards the contents of the ovary, the perianth of four to five linear-lanceolate pieces, achenes of a very dark brownish color, style rather short, thick. Habitat, Sikkim Himalayas and Khasi Hills, from 2,000 to 6,000 feet. Not common. At once distinguished by the singular cup formed by the united basal bract." (*Annals of the Royal Botanic Garden, Calcutta, vol. 1, p. 36.*)

39636 to 39660—Continued.

39644. HYPERICUM PATULUM Thunberg. Hypericaceæ.
St.-John's-wort.

See S. P. I. Nos. 1710 and 39118 for previous introductions and description.

A dwarf shrub in England, but said to grow as high as 6 feet high in Japan and the Himalayas. Leaves 1 to 2½ inches long, ovate, deep green above, glaucous beneath. Flowers 2 inches across, borne in a cyme at the end of the shoot; petals bright golden yellow, overlapping, roundish; sepals broadly ovate, one-third inch long. Stamens in 5 bundles. Introduced to Kew from Japan by Oldham in 1862; a native also of China and the Himalayas. It is not absolutely hardy in England (at Kew) and almost always has its stems cut back to ground level during the winter. These spring up again the following season from 1 to 2 feet high and flower from July to October. After a few years the shoots are apt to become more and more weakly and it becomes necessary to renew the stock from cuttings. The only species with which it can be confounded are *H. hookerianum*, from which it differs in the branchlets being 2-edged, especially just beneath the flowers; *H. lysimachioides*, which has narrow, linear-lanceolate sepals; and *H. uralum*, with flowers half the size. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 639.*)

39645. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook. f.)

See S. P. I. No. 39121 for previous introduction.

39646. LEUCOSCEPTRUM CANUM J. E. Smith. Menthaceæ.

"A tree 30 feet tall with short trunk, found in the temperate Himalayas from Kumaon to Bhutan at altitudes between 2,000 and 8,000 feet. Also in the Khasi Hills between 4,000 and 5,000 feet. The branches are very stout, nearly terete, densely or laxly tomentose or woolly, rarely glabrate. The elliptic-lanceolate, acuminate leaves are 6 to 12 inches long, glabrous above, silvery white, with buff or brown tomentum beneath, mostly variable in thickness, rarely green and glabrate. The corolla is of a whitish or pinkish color." (*Hooker, Flora of British India.*)

39647. LINDENBERGIA HOOKERI C. B. Clarke. Scrophulariaceæ.

39648. LOBELIA ROSEA Wallich. Campanulaceæ.

"A species occurring in the subtropical Himalayas from Kumaon to Bhutan and the Khasi Hills at altitudes of 4,000 feet. It is also abundant in the Terai of North Bengal and Assam. The stem is 4 to 12 feet high, suberect with short horizontal branches with drooping tips. The leaves are rather long, about 6 inches, narrow at both ends and about 1 inch wide in the middle. The corolla is three-fourths inch wide and of a rose or white color. The fruit is subglobose in form and one-third inch in diameter. The seeds are ellipsoid in shape, compressed, and not margined." (*Hooker, Flora of British India.*)

39649. MEMECYLON EDULE Roxb. Melastomaceæ. Ironwood.

"An exceedingly common shrub met with in the east and south of India and in Ceylon, Tenasserim, and the Andaman Islands. The leaves

39636 to 39660—Continued.

are employed in South India for dyeing a 'delicate yellow lake.' In conjunction with myrobolans and sappan wood they produce a deep red tinge much used for dyeing grass mats and cloth. The leaves are thought by the natives to be cooling and astringent, but though occasionally given internally they are chiefly employed as a lotion in conjunctivitis. The plant flowers in the beginning of hot weather and produces astringent, pulpy berries which when ripe are eaten by the natives. The wood is hard, close grained, durable, and valuable for many purposes, but very difficult to work. The shrub is very handsome when covered with its dense bloom of blue flowers, and well worth cultivating as an ornamental plant." (*Watt, Dictionary of the Economic Products of India.*)

39650. MORUS LAEVIGATA Wallich. Moraceæ. Mulberry.

"A medium-sized tree, wild and cultivated in the tropical and subtropical Himalayas from the Indus to Assam up to 4,000 feet. The flowers appear in the cold weather and the long cylindrical yellowish white or pale-purple fruit ripens from March to May and is eaten by some, though insipidly sweet and of little value. The wood is yellow, with darker streaks of various colors, and is used for boat oars and furniture." (*Watt, Dictionary of the Economic Products of India.*)

39651. OSBECKIA STELLATA Don. Melastomaceæ.

See S. P. I. No. 39126 for previous introduction and description.

39652. PANDANUS FURCATUS Roxb. Pandanaceæ.

"A palmlike tree of northern and eastern Bengal, western India, and Burma. The leaves are used in Burma for making mats, and according to some authorities the leaves of this species are sewn together to make sails for boats. The outer wood is moderately hard, containing satiny, vascular bundles; inner wood soft and spongy; used in Burma for making floats for fishing nets." (*Watt, Dictionary of the Economic Products of India.*)

39653. PHLOGACANTHUS THYRSIFLORUS (Roxb.) Nees. Acanthaceæ.

"A large evergreen shrub found in the sub-Himalayan tract from Kumaon to Assam, the Khasi Hills, and Burma. It is very handsome, with long spikes of flame-colored flowers. The wood is white, moderately hard, and close grained. Often cultivated." (*Watt, Dictionary of the Economic Products of India.*)

39654. PHOENIX OUSELEYANA Griffith. Phœnicaceæ. Palm.

See S. P. I. No. 21753 for previous introduction.

39655. RANDIA ULIGINOSA (Retz.) Poir. Rubiaceæ.

"A small deciduous tree of eastern, central, and southern India, but not commonly found in the more northern parts of the Peninsula. The fruit is used in dyeing as a color intensifier and also in medicine as a remedy for diarrhea and dysentery. The fruit when boiled or roasted is eaten by the natives as a vegetable, either alone or in curries. The leaves are boiled and eaten as greens and also serve as fodder for cattle. The wood is whitish gray, closely grained, and hard, but not used for any special purpose. The unripe fruits are used as a fish poison." (*Watt, Dictionary of the Economic Products of India.*)

39636 to 39660—Continued.

39656. RUBIA CORDIFOLIA L. Rubiaceæ. **Indian madder.**

An herbaceous creeper with perennial roots which is met with in the hilly districts of India from the northwest Himalayas eastward and southward to Ceylon. The *Manjit root* or *East Indian madder* is obtained for the most part from this species and is much employed by the natives of India for dyeing coarse cotton fabric or the threads from which it is woven various shades of scarlet, coffee brown, or mauve. The East Indian madder of commerce consists of a short stalk, from which numerous cylindrical roots about the size of a quill diverge. These are covered with a thin brownish pulp, which peels off in flakes, disclosing a red-brown bark marked by longitudinal furrows. Many different methods are used for dyeing with this madder, a short account of which may be found in Watt, Dictionary of the Economic Products of India.

39657. RUBUS CALYCINUS Wallich. Rosaceæ.

"A species native to the eastern and central temperate Himalayas and found in Sikkim as high as 9,000 feet above the sea and in Bhutan as high as 8,500 feet. This slender prickled species has a creeping stem which sometimes reaches 3 feet. The leaves are 1 to 3 inches in diameter and sometimes hairy beneath. The solitary or twin flowers are 1 inch in diameter and borne on erect 1 to 2 leaved shoots. This is very near a Philippine Island species, which has smaller flowers." (*Hooker, Flora of British India.*)

39658. RUBUS ROSAEFOLIUS Smith. Rosaceæ.

"A small shrub found in the temperate Himalayas from Kumaon to Sikkim at altitudes between 5,000 and 7,000 feet. It occurs also in the Khasi Hills and on the Hills of Ava and Martaban, and is distributed to Java. It is naturalized and cultivated in the Tropics and warm temperate regions, and in cultivation often has double flowers. The fruit is large, red, edible, and is frequently sold in Darjiling markets." (*Watt, Dictionary of the Economic Products of India.*)

39659. SENECIO SCANDENS Hamilton. Asteraceæ.

See S. P. I. No. 39080 for previous introduction.

39660. SOLANUM VERBASCIFOLIUM L. Solanaceæ.

"A shrub or small tree frequently met with throughout India in the tropical and subtropical regions and distributed to southeastern Asia, Malay, North Australia, and the tropical Americas. Used medicinally by the natives, but its properties are unimportant. In southern India it is cultivated for its fruit, which is eaten in curries. The wood is light yellow in color and of soft texture." (*Watt, Dictionary of the Economic Products of India.*)

39661. COMMELINA SIKKIMENSIS C. B. Clarke. Commelinaceæ.

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received December 30, 1914.

A species occurring in the Himalayas from Sikkim to Assam at altitudes ranging from 2,000 to 4,000 feet.

39662 to 39664.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received December 15, 1914.

39662. TOONA CILIATA Roemer. Meliaceæ. **Toon tree.**
(*Cedrela toona* Roxb.)

See S. P. I. Nos. 22076, 31250, and 32826 for previous introductions and description.

"A very handsome tree on account of its long, feathery, graceful leaves, which when young are of a crimson tint. It grows to a height of 40 to 50 feet and yields fine timber, which is of commercial importance." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

"The timber is durable, not eaten by white ants, and not liable to warp. It is therefore much in demand for furniture and carvings, especially in Seharunpur, and in Bengal and Assam is constantly used for tea boxes, hence its having become scarce. . . . The bark is used, along with a powder of the nuts (seeds) of *Cæsalpinia bonducella*, as a tonic and antiperiodic in native medicine. The flowers afford a red and yellow dye. The seeds, young shoots, and leaves are given as a fodder to cattle." (*Watt, Commercial Products of India.*)

39663. TRACHYCARPUS MARTIANA (Wall.) Wendl. Phœnicaceæ. **Palm.**

See S. P. I. No. 38739 for previous introduction and description.

39664. TETRASTIGMA BRACTEOLATUM (Wall.) Planchon. Vitaceæ.
(*Vitis bracteolata* Wall.)

"A species with smooth stems and numerous minute flowers, found in Bhutan and Assam. The stems and the trifoliate leaves are glabrous and the branches are very slender, with leaves 3 to 5 inches long. The fruit is 2 to 3 seeded, of the size of a pea, round in form and black in color. The flowers of this species are by far the smallest of the genus." (*Hooker, Flora of British India.*)

39665 to 39674.

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received December 30, 1914.

39665. CURCULIGO RECURVATA Dryander. Amaryllidaceæ.

"A stemless tuberous-rooted herb 2½ or more feet high, native of tropical Asia and Australia. The leaves are formed from the roots, and are also the drooping yellow flowers which appear almost on the ground. It is used by florists for vases, jardinieres, and all other general decorative work. To be at its best it should be planted in a bed where it will attain a height of 5 feet. When planted in this manner it is a very desirable summer ornamental. The graceful arching leaves are so constructed that they move from side to side with the slightest movement of the air. This species is propagated by division and the pieces if placed in sand in a warm greenhouse will root readily before potting." (*Bailey, Standard Cyclopedia of Horticulture.*)

39666. FICUS HOOKERI Miquel. Moraceæ.

See S. P. I. Nos. 39114 and 39643 for previous introductions and descriptions.

39667 and 39668. ILEX spp. Aquifoliaceæ. **Holly.**

39667. ILEX FRAGILIS Hook. f.

A small tree with very brittle, quite glabrous branches which is found in the Sikkim and Bhutan Himalayas at altitudes of 7,000

39665 to 39674—Continued.

to 10,000 feet and in the Khasi Mountains at Sururem as high as 5,000 feet. The leaves are of a bright deep-green color and more membranous than any of the other Indian species. They are very strongly reticulate, with many raised nerves beneath the petiole, one-half to two-thirds inch long. The flowers are one-eighth inch in diameter and fascicled. The fruit, which is borne on short, stout pedicels, is one-sixth inch in diameter, fleshy, red, globose; stigma rather large and tumid; stones thickly coriaceous. (Adapted from *Hooker, Flora of British India.*)

39668. ILEX INTRICATA Hook. f.

A low, rigid, straggling shrub, forming matted masses with interlaced woody branches, found in the Sikkim and East Nepal Himalayas as high as 11,000 feet above the sea. The branchlets are stout, angled, and rigid; the ridges warted. The leaves are spreading, thickly coriaceous, of a bright green color, and narrowed into very short petioles. The flowers are one-tenth inch in diameter, and the sessile fruit is globose in form and red in color. (Adapted from *Hooker, Flora of British India.*)

39669. IMPATIENS LONGIPES Hook. f. and Thoms. Impatientaceæ.

A very distinct plant 4 to 5 feet in height found in the temperate Sikkim Himalayas from 8,000 to 10,000 feet above the level of the sea. This species has scattered uniform leaves and long, axillary, subhorizontal peduncles 2 to 5 inches long. Leaves 3 to 5 inches, membranous, rather falcate; petiole one-fourth to one-half inch. Flowers loosely racemed, pale yellow, unspotted; buds rounded at the apex, sepals sometimes four, ovate lanceolate; lateral winged lobe rounded, terminal 1 inch, broadly subulate. Hooker states that he has not seen any other habitat for this species but Sikkim. In the form of flower it is most allied to *Impatiens laxifolia* and its allies. (Adapted from *Hooker, Flora of British India.*)

39670. PIPTANTHUS NEPALENSIS (Hook.) Sweet. Fabaceæ.

See S. P. I. Nos. 39043 and 39128 for previous introductions and description.

39671. SAMBUCUS JAVANICA Reinw. Caprifoliaceæ.

"This is a very widely distributed species ranging from the Malayan Archipelago to central Japan and western China and has also been found in eastern Africa. It is characterized by the slender-pedicelled flowers, the presence of conspicuous abortive flowers, and the very wide and loose inflorescence with the longer rays subthyrsoid. It has red fruits and shows a tendency to have the upper leaflets more or less adnate to the rhachis and sometimes decurrent." (*Sargent, Plantae Wilsonianae, part 2, p. 307.*)

39672 and 39673. SOLANUM spp. Solanaceæ.

39672. SOLANUM sp.

39673. SOLANUM TORVUM Swartz.

See S. P. I. Nos. 3915, 24651, and 30895 for previous introductions.

39674. STEPHANIA ROTUNDA Lour. Menispermaceæ.

See S. P. I. No. 39084 for previous introduction.

39675. STIZOLOBIUM sp. Fabaceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received December 31, 1914.

39676 to 39681.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received December 10, 1914. Seeds of Chinese plants sent to the Arboretum by Mr. Maurice L. de Vilmorin.

39676. CRATAEGUS sp. Malaceæ. **Hawthorn.**
No. 7380.

39677. MEIBOMIA sp. Fabaceæ.
No. 7389.

39678 and 39679. RHUS sp. Anacardiaceæ.

39678. No. 7379. **39679.** No. 7385.

39680. THUJA sp. Pinaceæ. **Arbor vitæ.**
No. 7378.

39681. LEPTODERMIS OBLONGA Bunge. Rubiaceæ.
No. 7392.

A shrub or bush, about 3 feet in height, with white, pink, or purplish flowers. It is native of central and western China, where it ascends to 3,000 meters (10,000 feet), growing in rocky places. (Adapted from *C. S. Sargent, Plantae Wilsonianae, vol. 3, part 2, p. 403, 404, 1916.*)

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Issued April 17, 1918.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1915.

(No. 42; Nos. 39682 to 40388.)

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INTRODUCTORY STATEMENT.

Owing to the disturbed condition of ocean traffic and the uncertainty of getting perishable plant material in, no expeditions were undertaken except that into the Province of Kansu, China, which had been planned for two years. Nevertheless, an unusual number of interesting and important plants are described in this number of the inventory. Mr. Frank N. Meyer, who made the Kansu expedition, although hampered by the difficulty of getting good interpreters who were willing to accompany him to the borders of Tibet, succeeded in getting as far as the capital of Kansu Province, but was obliged to retrace his steps from that point.

He discovered a number of very interesting plants, however, among which perhaps the most important will be found to be some large-fruited wild freestone peaches, *Amygdalus* spp. (No. 40001 to 40006); the Tangutian bush almond, *Amygdalus tangutica* (Nos. 39898, 40010, and 40011), a species very resistant to drought and cold; a wild pear, *Pyrus ussuriensis* (No. 40019), of the melting, juicy type, quite distinct from the characteristic hard, gritty ones of China; a wild species of grape, *Vitis* sp. (No. 40026), with small bunches of black edible berries; wild hardy apricots, *Prunus armeniaca* (Nos. 40012 and 40013), which may enable breeders to extend the area of successful apricot culture farther northward; a very hardy dwarf crab apple, *Malus* sp. (No. 39923), from an altitude of 9,000 feet in Kansu; a wild gooseberry, *Ribes alpestre giganteum* (No. 39916), growing 15 feet tall, found on dry embankments, a promising hedge plant for the cold semiarid sections of the United States; a very vigorous-growing currant, *Ribes* sp. (No. 39910), from 7,000 feet altitude, which makes a bush 25 feet tall; a wild cherry, *Prunus setulosa* (No. 39911), which has possibilities as a stock plant; Potanin's peach, *Amygdalus persica potanini* (Nos. 40007 to 40009), a bushy form resembling otherwise *A. davidiana*, which has been so successful as a stock, but

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which, according to Mr. Meyer, is likely to prove even more drought resistant than the latter species and be useful as a stock in the dry regions of this country; two wild plums, *Prunus* spp. (Nos. 40014 and 40015), with possibilities for breeding purposes, from Shensi Province; and a citrus species (Nos. 39897 and 40039), with fruits resembling those of a sour mandarin, which would appear to have unusual hardiness.

Of shade trees and shrubs for dooryards, Mr. Meyer secured a poplar, *Populus suaveolens przewalskii* (No. 39900); a beautiful evergreen bush, *Daphne tangutica* (No. 39914), suited to regions like Long Island: a bush honeysuckle, *Lonicera* sp. (No. 39915), for low hedges in the colder sections of the country; a Chinese rowan, *Sorbus* sp. (No. 40021); an ideal cover for shady portions of the dooryard, *Schizandra sphenanthera* (No. 40025); a valuable late-flowering porch climber with white flowers, *Polygonum* sp. (No. 40034); and Wilson's horse-chestnut, *Aesculus wilsonii* (No. 40037), from near Chenghsien, Kansu, a new form of this valuable avenue tree.

Of the introductions made through correspondents the following are the most noteworthy:

Four varieties of corn, *Zea mays* (Nos. 39936 to 39939), were collected by Mr. F. Kingdon Ward in the Valley of Nmaihka in Upper Burma, where a remarkable corn culture exists at an altitude of 5,000 to 6,000 feet, which appears to be very ancient. On one of these varieties (No. 39937) Mr. Collins has found signs of the characteristic waxy endosperm which has heretofore appeared only on corns from eastern China and nowhere else in the world, and this fact may be of value in determining the origin of this remarkable corn. A surprisingly interesting collection of Spanish corn varieties, *Zea mays* (Nos. 40259 to 40294), from Spain and the Canary Islands and different portions of the mainland, which was made by Señor Valero, an official agricultural engineer who recently visited this country, has already unusually excited the interest of the corn specialists.

So much interest attaches to the spineless cactus that the discovery in Hawaii of a form without spines and with very few spicules, *Opuntia* sp. (No. 39853), which is supposed to have been brought there by Don Marin and which in comparison with Burbank's spineless cactus has shown its ability to live on dry islands of the Hawaiian group where the Burbank cactus has quickly perished, will interest a wide circle of experimenters.

The Porto Rican black walnut, *Juglans portoricensis* (No. 40236), which matures its nuts in April and May; the red bush nut from New South Wales, *Hicksbeachia pinnatifolia* (No. 39871); the late-blooming varieties of English walnut, *Juglans regia* (Nos. 39839 to 39844 and 39881 to 39886), from Grenoble, France, to which our attention was directed by Prof. J. Russell Smith; the Tibetan tree hazelnut, *Corylus*

chinensis (No. 39907), which grows to 100 feet in height and of which Mr. Meyer has secured seeds in China; the wild small-fruited but probably very hardy walnuts from Kansu, *Juglans regia* (No. 40016); and a new form of the comparatively disease-resistant Chinese chestnut with slender trunk, *Castanea* sp. (Nos. 40035 and 40036), will be of particular interest to nut specialists.

Extensive introductions of sweet-potato varieties have been made through Mr. Roig from the experiment station at Santiago de las Vegas, where many trials have been conducted with this vegetable, *Ipomoea batatas* (Nos. 39729 to 39735, 39741 and 39742, 39799 to 39802, 39831 to 39833, 39941 to 39945, 40237 to 40258, and 40388).

A Japanese gentleman visiting this country, Mr. Kuwashima, has directed attention to the fact that one of the highest priced vegetables in Japan is the Mitsuba or Mitsuba-jeri, *Deringa canadensis* (No. 39869), a native of this country as well. The young leaves are eaten boiled and the roots are fried.

Dr. Trabut has sent in a wild pear, *Pyrus mamorensis* (Nos. 40297 and 40331), from the Moroccan forests of Mamora, which is resistant to drought and thrives in sandy noncalcareous soils.

Thirteen varieties of plum, *Prunus bokhariensis* (Nos. 40223 to 40235), adapted to the warm South, from Seharunpur, India, have been sent in by Mr. Hartless. They begin fruiting in May and bear for two months.

His Majesty the Ameer of Afghanistan sent through his special envoy, Mr. Jewett, a remarkable collection of dried fruits and seeds representing varieties of tree and field crops which are grown in his country. The most interesting of these were the samples of dried white mulberry, *Morus alba* (No. 40215), which in Afghanistan is considered a very important article of food and proved upon analysis to have the food value of dried figs. As Kabul has a cold winter climate and is subjected to intense summer heat, the cultivation of a sweet, drying variety of mulberry may be worth considering for the Great Plains of this country. Those sent by the Ameer were extremely palatable.

The best market apple of southern Italy and Sicily is the Limoncella (No. 39829). Dr. Gustav Eisen, who sent in bud wood of it, considers it superior to any variety now grown in southern California, where it is likely to succeed best.

Of strictly southern or subtropical introductions, the following are worth mentioning: The black sapote from the Isle of Pines, *Diospyros ebenaster* (No. 39719); the famous durian of Java, *Durio zibethinus* (No. 39709), noted at the same time for its delicious flavor and offensive odor; a rare species of anona, *Annona sclerodema* (No. 40305), from Guatemala, of richer flavor than the soursop; the Harrar fig from Abyssinia, *Ficus* sp. (No. 39828), which

can stand heavy summer rains and may thrive in Texas; the sycamore fig, *Ficus sycomorus* (Nos. 39827, 39857, and 39858), which is at the same time a shade tree and a fruit tree of minor importance, interesting because of the ancient methods practiced to liberate the fig insects from the fruit; and the bushukan or finger citron of Japan, *Citrus medica sarcodactylis* (No. 39940), a curious dwarf potted plant grown for its fragrant flowers and the perfume of its fruits.

Of shade trees, park shrubs, and plants for the dooryards of the city, as well as country homes, there are an unusual number in this inventory. They include the best of the Egyptian tamarisks, *Tamarix aphylla* (No. 39856), remarkably successful as a timber tree on reclaimed desert lands where the irrigation water is quite saline, and three species of tamarisks from the Caucasus, *Tamarix hohenackeri* (No. 39691), *Tamarix pentandra* (No. 39692), and *Tamarix* sp. (No. 39693); the giant-fruited oak of Zacuapam, Mexico, *Quercus insignis* (No. 39723), with acorns 2½ inches across; two remarkably fragrant flowered species of Pittosporum from the Riviera, where they have been found successful, *P. floribundum* and *P. macrophyllum* (Nos. 39727 and 39728); the Guadeloupe Island palm, *Erythea edulis* (No. 39740), suggested as possibly hardy in the South Atlantic coast region; a collection of correctly named varieties of Japanese flowering cherries, *Prunus serrulata* (Nos. 39743 to 39798 and 39820 to 39826), presented by the municipality of Tokyo and taken from the cherry-tree arboretum maintained by this municipality itself by Mr. E. H. Wilson, of the Arnold Arboretum; a collection of cotoneasters, *Cotoneaster* spp. (Nos. 40162 to 40175), many of which have proved especially adapted to dooryard use; a collection of barberries, *Berberis* spp. (Nos. 40139 to 40153), from the Kew Gardens, to test in comparison with Thunberg's barberry, which has become one of the most popular of spiny dooryard ornamentals; the large wild cherry tree of Japan, *Prunus serrulata sachalinensis* (No. 40190), a long-lived timber tree, which grows to be 80 feet tall and centuries old and has not yet been used as a stock by the Japanese, though probably the hardiest of all Japanese species and superbly beautiful with its masses of pink blooms; a new linden, probably a hybrid, *Tilia euchlora* (No. 40197), which, because of its large bright-green leaves and their freedom from insects, is being planted as a street tree on the Continent; a new species of flowering quince, *Chaenomeles japonica* (No. 40161), most charming of the red-flowered shrubs, the fruits of which make excellent preserves, and its relative, the large-fruited Chinese quince, *Chaenomeles lagenaria cathayensis* (No. 40160), the large ornamental fruits of which are used for perfume purposes; and two new roses for the rose breeders, one from the Himalayas, *Rosa webbiana* (No. 40191), and the other

from central China, with delicate purplish rose blooms, *Rosa sertata* (No. 40193).

Through the courtesy of Prof. Sargent, of the Arnold Arboretum, seeds have been received of a number of the rare shade, park, timber, and ornamental trees from foreign countries which have proved hardy at Jamaica Plain, Mass., and are worthy of a wider trial in the Northern States (Nos. 39983 to 39998).

Chinese names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the village names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that valuable reference work.

The manuscript of this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made and the notes on geographic distribution compiled by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 20, 1916.

INVENTORY.

39682 to 39690.

From Sibpur, near Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Garden. Received January 11, 1915.

"Collected on the eastern Himalayas." (*Calder.*)

39682. CREPIS JAPONICA (L.) Bentham. Cichoriaceæ.

A common eastern Asiatic herb.

39683. POGOSTEMON FRATERNUS Miquel. Menthaceæ.

Distribution.—An herbaceous perennial related to patchouli and belonging to the mint family, found at an altitude of 3,000 to 5,000 feet in the Sikkim Himalayas in India and in Java.

39684. BLUMEA MYRIOCEPHALA DC. Asteraceæ.

Distribution.—A composite shrub with leaves 6 to 10 inches long and small heads of flowers in a pyramidal panicle; found in the Sikkim Himalayas in India.

39685. MARSDENIA TENACISSIMA (Roxb.) Wight and Arnott. Asclepiadaceæ.

A climbing plant distributed throughout the lower Himalayas, ascending to 5,000 feet, from Kumaon to Assam and Burma. The plant is fond of dry, barren localities, twining on the bushes and small trees. The bark of the stems yields a large quantity of beautiful fine silky fiber, which is extracted by cutting the stems into sections and then scraping them clean with the finger nails or with a stick. The mountaineers of Rajmahal make their bowstrings from this fiber, because of its strength and durability. In Dr. Roxburgh's tests of twine made from this fiber, he found that in the dry and wet states it bore a strain of 248 and 343 pounds, when hemp in the same state bore 158 and 190 pounds. More recent tests, however, place it below hemp in strength, but above it in elasticity. The fiber is much used in making fishing nets, and is not liable to injury by submersion in water. One of the chief characteristics of this fiber is its elasticity, and it is considered to be the second best fiber in India. This species, though producing a good fiber, is not in general cultivation, being a climber; difficulties exist with which the Indian cultivator has not yet attempted to deal. A milky juice exudes from the cuts on the stems which thickens into an elastic substance, which acts in the same way as India rubber in removing black-lead marks. (Adapted from *Watt, Dictionary of the Economic Products of India,* and *C. R. Dodge, Useful Fiber Plants of the World.*)

39686. CARYOPTERIS PANICULATA C. B. Clarke. Verbenaceæ.

"A spreading shrub, from Upper Burma; branches terete, slender, pubescent. Leaves mostly obtuse or rounded at the base. Panicles axillary, subsessile one-half to 2½ inches, distinctly panicled, rachis dis-

39682 to 39690—Continued.

tinct, often 20 to 60 flowered. Corolla pubescent, deep red." (*Hooker, Flora of British India, vol. 4, p. 597.*)

Of similar value perhaps to *C. mastacanthus.*

39687. HOYA GLOBULOSA Hook. f. Asclepiadaceæ.

Distribution.—A stout, handsome, asclepiadaceous climber with orbicular leaves and umbels of cream-colored flowers, found up to an altitude of 3,000 feet in the Himalayas of Sikkim and Assam, in India, and succeeding under the same treatment as *H. carnosa.*

39688. TRIUMFETTA PILOSA Roth. Tiliaceæ. **Burweed.**

An herbaceous hairy or bristly tropical weed with yellow flowers in dense cymes.

39689. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ.
(*Erianthus fulvus* Nees.)

"A perennial grass found in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. Stems 6 to 8 feet high, silky hairy just above the panicle. The leaves are 2 to 3 feet long and one-fourth inch to 1 inch wide, slightly rough and with the margins of the sheath hairy. Panicle 8 to 18 inches, grey white or tinged with purple. Spikelets about one-tenth inch long with the basal hairs 3 to 4 times as long as the spikelets." (*Collett, Flora Simlensis.*)

Introduced for the work of the Office of Forage-Crop Investigations.

39690. NEYRAUDIA MADAGASCARIENSIS (Kunth) Hook. f. Poaceæ.

"A species found on the plains of north India, ascending to 5,000 feet, throughout tropical Asia and Africa and Madagascar. A perennial grass with leafy, solid stem 6 to 10 feet high. The leaves are flat, 1 or 2 feet long and up to 1 inch wide, with base clasping the stem. Ligule very short and hairy. Spikelets purple-brown, narrow, slightly flattened, one-fourth to one-third inch long, 4 to 8 flowered (flowers all fertile except sometimes the uppermost), in a shining, silky erect panicle 1 to 3 feet long. The branches are in half whorls and more or less spreading." (*Collett, Flora Simlensis.*)

39691 to 39693. TAMARIX spp. Tamaricaceæ. **Tamarisk.**

From Caucasus, Russia. Presented by the Tiflis Botanic Garden. Received January 7, 1915.

39691. TAMARIX HOHENACKERI Bunge.

39692. TAMARIX PENTANDRA Pallas.

"This shrub or small tree is one of the most decorative tamarisks in cultivation, flowering in great profusion in July and August. In the wild state it ranges from the Balkan Peninsula through southern Russia to Turkestan, and from Asia Minor to Persia, adorning the banks of rivers, particularly in their lower reaches and estuaries. Like other species of this genus, it thrives well in saline soils, but is by no means dependent on a more than ordinary amount of salts in the ground. The flowers are usually rose-colored, but sometimes white or nearly so." (*Botanical Magazine, pl. 8138.*)

39693. TAMARIX sp.

39694 to 39697.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 7, 1915.

39694. SOLANUM DULCAMARA L. Solanaceæ.

A vine of the nightshade sort.

39695. ZANTHOXYLUM BUNGEI Planchon. Rutaceæ.

Hua chia.

39696. CLEMATIS sp. Ranunculaceæ. **Clematis.**

Purple mountain clematis.

39697. LONICERA sp. Caprifoliaceæ.

Red-berried shrub; flowers like woodbine.

39698. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Santa Fe, Isle of Pines. Presented by Mr. H. S. Jones. Cuttings received January 18, 1915.

See S. P. I. No. 39719 for description.

39699 and 39700. CITRUS spp. Rutaceæ.

From Catania, Italy. Presented by Mr. Joseph E. Haven, American consul. Received January 16, 1915.

39699. CITRUS BERGAMIA Risso. **Bergamot orange.**

39700. CITRUS AURANTIUM L. **Bitter orange.**

"To the bitter orange plant is grafted the bud wood of the Bergamot orange, as Bergamot oranges do not grow from a Bergamot seed." (*Haven.*)

39701. OPHIOPOGON JAPONICUS (L.) Ker. Liliaceæ.

Grown at the Plant Introduction Field Station, Rockville, Md.

"A small evergreen plant, with grasslike leaves, growing to a height of 3 to 6 inches and bearing racemes of small white flowers followed by pale-blue berries. Much used in Italy as a ground cover in the shade of trees where grass will not grow." (*Peter Bisset.*)

39702 to 39705. DIOSCOREA spp. Dioscoreaceæ. **Yam.**

From Guam. Presented by the Experimental Station of Guam, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received January 13, 1915.

For a general discussion of the yams of Guam, see W. E. Safford, Useful Plants of Guam, pages 257 to 263, 1905.

39702. *Nika.*

39703. *Nika cimarron.*

39704. *Dago agaga.* (Red yam.)

39705. *Dago hava.* (Southern yam.)

39706. RHUS sp. Anacardiaceæ.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 7, 1915.

Cha lu kou.

39707. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Foley, Ala. Purchased from Mr. J. L. Sebastian. Received January 9, 1915.

Seed from S. P. I. No. 21013, sent him in February, 1908.

39708. VANILLA sp. Orchidaceæ. **Vanilla.**

From Tampico, Mexico. Presented by Mr. Thomas H. Bevan. Cutting received January 12, 1915.

39709. DURIO ZIBETHINUS Murr. Bombacaceæ. **Durian.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received January 11, 1915.

See S. P. I. Nos. 28082, 34072, and 37103 for previous introductions.

"A very large, handsome, pyramid-shaped tree, native of the Malayan Archipelago and commonly cultivated in the Straits, Burma, Java, etc., for the sake of its celebrated fruit. The latter is produced on the older branches, varies somewhat from round to oval in shape, and usually weighs from 5 to 7 pounds or more. It is armed with thickly set, formidable prickles about one-half inch long; when ripe it becomes slightly yellow and possesses an odor which is intensely offensive to most people, especially on first acquaintance with it. The cream-colored pulp surrounding the seed is the edible portion; this is most highly prized by the Malays and other oriental people, and is also relished by Europeans who acquire a taste for it. Firminger describes it as 'resembling blancmange, delicious as the finest cream,' while Mr. Russel Wallace considered that 'eating durians is a sensation worth a voyage to the East.' The large seeds may be roasted and eaten like chestnuts. Pounded into flour they are said to be sometimes made into a substance like 'vegetable ivory.' The durian tree thrives in the moist low country of Ceylon up to 2,000 feet elevation and luxuriates in deep alluvial or loamy soil. In Peradeniya Gardens there are magnificent specimens well over 100 feet in height. They usually flower in March or April, and the fruit is ripe in July or August. Durian fruits are variable in size, shape, flavour, and quantity of pulp, according to variety. The trees also vary in productiveness, some varieties being almost barren. Selection and high cultivation should therefore be practiced in order to obtain the best fruits. The tree is readily propagated by seed if sown fresh; the seed is of short vitality and germinates in 7 to 8 days." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 142.*)

39710. QUERCUS SUBER L. Fagaceæ. **Cork oak.**

From Gibraltar, Spain. Procured through Mr. Richard L. Sprague, American consul. Received January 4, 1915.

"Spanish cork oak acorns gathered in the cork woods near Alpandiere and Gaucin station, Province of Malaga, 45 miles north of Gibraltar. These acorns are of fine quality." (*Sprague.*)

See S. P. I. No. 36925 for previous introduction.

39711. CHENOPODIUM BONUS-HENRICUS L. Chenopodiaceæ. **Good King Henry.**

From Lincoln, Lincolnshire, England. Purchased from Pennell & Sons. Received January 2, 1915.

For experimental use as greens; not for distribution.

39712. CITRUS BERGAMIA Risso. Rutaceæ. **Bergamot orange.**

From Naples, Italy. Presented by Mr. Jay White, American consul. Received January 5, 1915.

"A small tree; leaves oblong oval, with long, winged petioles; flowers small, white, very fragrant; fruits pyriform, 3 to 4 inches in diameter, thin skinned, pale yellow when ripe; pulp acid; seeds oblong, many. Extensively cultivated in Calabria for the essential oil which is expressed from the peel and used in making eau de Cologne and other perfumes. (*Swingle. In Bailey, Standard Cyclopedia of Horticulture.*)

39713. CASTANOPSIS sp. Fagaceæ.

From Changning, Kiangsi, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received January 5, 1915.

"While crossing some hills near here I came across some chestnut trees which are new to me. I think that, though smaller, the nuts have a better flavor than the common kind." (*Bousfield.*)

39714. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Fairhope, Ala. Presented by Mr. C. O. White. Received January 2, 1915.

Seeds from S. P. I. No. 21013 sent to Mr. White in 1908.

39715 and 39716.

From Calcutta, India. Presented by the Botanic Garden, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 4, 1915. Quoted notes by Mr. Piper.

39715. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepensis* Pers.)

"This Indian variety of Johnson grass differs in producing more abundant rootstocks and in having a larger, looser panicle with drooping branches."

39716. ANDROPOGON ANNULATUS Forsk. Poaceæ.

"An abundant grass in northern India often cut for hay."

Stems one-half to 3 feet long, branching, often half climbing, bent at the lower joints and then ascending; leaves mostly basal, 6 to 12 inches long, narrow, rigid, upper surface hairy. Spikelets in pairs on five to eight unequal spikes 1 to 2½ inches long and forming a digitate cluster at the top of the stem. (Adapted from *Collett, Flora Simlensis, p. 603.*)

39717 and 39718.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 2, 1915.

39717. CASTANEA sp. Fagaceæ. **Chestnut.**

Chestnuts from Anhwei.

39718. SOLANUM DULCAMARA L. Solanaceæ.

An ornamental vine with red berries.

39719. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

From Santa Fe, Isle of Pines. Presented by Mr. H. S. Jones. Received January 4, 1915.

"From fine ripe fruits from 2½ to 3 inches in diameter. The fruits are just beginning to ripen (December 28) and will last until about the middle of February." (*Jones.*)

"The *sapote prieto* or *sapote negro* (black sapote) of Mexico, an interesting fruit belonging to the persimmon family. The tree grows in compact, shapely form and is of very ornamental appearance with its oblong-oval, glossy leaves about 4 inches long. In appearance the fruits greatly resemble some varieties of the kaki or Japan persimmon; in place of being bright orange, however, they are light green when ripe, and measure 2½ to 3 or even 4 inches in diameter. In shape they are oblate or distinctly flattened and the persistent, light-green calyx is quite prominent.

"The interior of the fruit, when ripe, is anything but attractive in appearance, the flesh being dark brown or almost black in color, and of a greasy consistency. The flavor is sweet, but rather lacking in character; for this reason the Mexicans frequently serve the fruit cut up, or mashed up, with orange juice; it is a first-rate dish. The seeds look like those of the persimmon and are not very numerous.

"According to Mr. Jones, the fruit ripens in the Isle of Pines from the last part of December to the middle of February. The tree is rare outside of certain parts of Mexico, but has done well at Mr. Jones's place. It seems worthy of much wider dissemination throughout the Tropics. Types from the cooler parts of Mexico have withstood a little frost in southern California, yet the tree can not be considered very hardy." (*Wilson Popenoe.*)

For previous introductions, see S. P. I. Nos. 24600 and 39698.

39720. COCOS NUCIFERA L. Phœnicaceæ. **Coconut.**

From Panama. Secured by Mr. H. Pittier, of the Bureau of Plant Industry. Received January 4, 1915.

"This shipment may contain specimens of the *Burica*, *San Blas*, which the natives call *coco de cuchilla*, and possibly specimens of the *Montiosa* variety." (*Pittier.*)

39721. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

From Tientsin, China. Procured through Mr. Samuel S. Knabenshue, American consul general. Received May 14, 1914.

39722. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

From Budapest, Hungary. Presented by the American consul.

39723. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received January 7, 1915.

"These acorns were sent to me by a friend, Señor Guillermo Ziche, from Huatusco, and were collected in the Sierras west of town at about 1,500 to 1,600 feet altitude. I am sure you will be able to grow the oaks in the southern part of Florida, where the palms (*Roystonea* (*Oreodoxa*) *regia*) grow. They need a moist climate or subtropical forests to do well." (*Purpus.*)

GIANT ACORNS OF A MEXICAN OAK (QUERCUS INSIGNIS, S. P. I. No. 39723).

A white oak which occurs about midway down the flanks of Mount Orizaba, forming there trees 60 to 80 feet high branching 30 or 40 feet from the ground. Believed by Dr. C. A. Purpus capable of acclimatization in Florida, Porto Rico, and Hawaii. The acorns are edible. Photographed, natural size, by Mr. E. L. Crandall, Washington, D. C., March 14, 1914 (P13834FS).

THE SYCAMORE FIG (FICUS SYCOMORUS S. P. I. NOS. 39827, 39857, AND 39858).

From the wood of this "sycamore" of Scripture, the "Tree of Life" of the Egyptians, the ancient coffins were made. It is a true fig tree and was introduced into Egypt, probably from Yemen on the east coast of the Red Sea, in very early times. It bears figs of inferior quality which are inhabited by the fig insect (*Sycophaga crassipes*). These figs are not fit to eat unless their tips are cut off to let the fig insects escape. From the time of Pliny even the Egyptian boys have operated on these sycamore figs, using a kind of thimble made of iron plate ending in an iron "finger nail." The figs are borne on small leafless fleshy branches arising directly from the trunk, and it is the practice to beat the trunk of the tree with a hammer to increase its fruitfulness. The illustration shows the scars thus induced. Photographed by S. C. Mason (P20231CP).

"The tree is rapid in growth and quite different in habit from most oaks. It reaches an ultimate height of 60 to 80 feet or more, is quite erect, and sends out large branches at the height of 30 or 40 feet from the ground. It is found in considerable abundance about midway down the flanks of Mount Orizaba, being most common about Chiapas, according to Dr. C. A. Purpus, who has recently been collecting in that region. It is a white oak, maturing its fruit the first season, and, being a white oak, its fruit has sufficient edible quality to be available at least for stock food.

"The only other oaks that approximate it in size, according to Dr. William Trelease, of the University of Illinois, who called the attention of this association to the species, 'are a close relative, *Quercus strombocarpa*, of the same region, and a Guatemalan black oak, *Q. skinneri*, the latter apparently an equally large tree and with acorns 2 inches in diameter, but presumably bitter or astringent like our own black acorns.'

"The nuts of the *Quercus insignis* are usually about 2 inches in diameter, but may reach 2½ inches. Their weight is from 50 to 65 grams each. In view of its range, the tree is naturally to be supposed unsuited to a temperate climate, but Dr. Purpus writes, 'I think it a very useful tree, which could be raised in Florida, Cuba, Porto Rico, etc.' The Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture is now endeavoring to introduce it to those regions on a large enough scale to give it a chance of success. If it is found to be well adapted, it is possible that native species of oaks could in some cases be grafted over with the productive new one, thus yielding a large crop of acorns with very little trouble or care. Hybridizing experiments should also be tried with some of the best North American oaks, with a view to seeing whether the size of their acorns can not be increased." (*The Journal of Heredity, vol. 5, p. 406, 1914.*)

For an illustration of the giant acorns of this Mexican oak, see Plate I.

39724 to 39726.

From Tientsin, China. Presented by Dr. Yamei Kin, Peiyang Woman's Medical School and Hospital. Received January 8, 1915. Quoted notes by Dr. Kin.

39724. BRASSICA PEKINENSIS (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

"Seed from Shantung of the fine, specially white *pai ts'ai*. It is grown in the same way as the Chihli *pai ts'ai*, but is larger, not so tall, and said to be of better keeping quality."

39725 and 39726. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

"White melon that is very delicate in flavor and easily grown."

39725. Larger seeds. **39726.** Smaller seeds.

39727 and 39728. PITTOSPORUM spp. Pittosporaceæ.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky, Jardin d'Acclimatation. Received January 6, 1915. Quoted notes by Dr. Proschowsky.

39727. PITTOSPORUM FLORIBUNDUM Wight and Arnott.

"This species has large leaves and is of comparatively rapid growth. It has numerous small flowers, which are very fragrant. It is one of the most floriferous species I possess, and is new to the Riviera."

For previous introductions, see S. P. I. Nos. 39044 and 39129.

39727 and 39728—Contd. (Quoted notes by Dr. A. Robertson-Proschowsky.)

39728. PITTOSPORUM MACROPHYLLUM Laut. and K. Sch.

"The plant has existed in my garden for more than twenty years. It is the most beautiful of the dozen or so *Pittosporum* species which I cultivate. The leaves occasionally attain nearly the size of those of *Magnolia grandiflora*, and the flowers are perhaps not surpassed in fragrance by any other flower. Indeed, the fragrance is most exquisite. Would not such highly fragrant flowers be of value for the extraction of perfume?"

For previous introduction, see S. P. I. No. 11644.

39729 to 39735. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Tubers received January 7, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

39729. "*Candela.* From Trinidad, Santa Clara. White inside; yielding 34,260 arrobas per caballería."

39730. "*Camarioca.* From Punta Brava, Havana. Yellow inside; yielding 26,834 arrobas per caballería."

39731. "*Pan con vino.* From Madruga, Havana. Red outside, striped with violet inside, very sweet; yielding 48,695 arrobas per caballería."

39732. "*Hache.* From Jiguani, Oriente. Pale yellow inside; yielding 36,521 arrobas per caballería."

39733. "*Camarcto.* From Cienfuegos. Saffron colored inside; yielding 15,060 arrobas per caballería."

39734. "*Mongorro.* From Isle of Pines. Deep yellow inside; yielding 23,408 arrobas per caballería."

39735. "*Miseria.* From El Caney, Oriente. Pale yellow inside; yielding 14,530 arrobas per caballería."

39736 and 39737.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 11. 1915.

39736. CELASTRUS sp. Celastraceæ.

"*Chiang yeh shu.*"

39737. RHYNCHOSIA VOLUBILIS Lour. Fabaceæ.

"*I ho tzŭ.*"

A twining herb with tomentose, subrotund, ternate leaves and many yellow axillary flowers.

Distribution.—Eastern China and Indo-China.

39738. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Yokohama, Japan. Procured from the Yokohama Nursery Co. Received January 18, 1915.

"Tochigi production; slender tall variety."

39739. EUONYMUS sp. Celastraceæ.

From Nanking, China. Presented by Rev. Joseph Bailie, University of Nanking. Received January 14, 1915.

"*Yen chih shu.* Leaves are like laurel; fruit is a little bright-scarlet seed protruding from a little husk." (*Bailie.*)

39740. ERYTHEA EDULIS (Wendl.) Watson. Phœnicaceæ.

Guadeloupe Island palm.

From Santa Barbara, Cal. Presented by Mr. W. H. Morse, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received January 21, 1915.

"This palm has been found in the wild state only on Guadeloupe Island, off the coast of Lower California, but it has been planted widely in the coast region of California and undoubtedly is one of the finest, and at the same time one of the hardiest, of the whole series of ornamental palms. In California it appears to be more hardy than Washingtonia, and since Washingtonia is being grown at Charleston and other Atlantic coast points, the Guadeloupe Island palm may also be able to survive. At least it should be given a fair trial. It may not be as well suited to Florida, on account of the hot, humid summer. Trachycarpus also does not thrive in Florida. We would suggest that seedlings be grown for experimental planting in the Carolinas and other Atlantic Coast States." (*Cook.*)

39741 and 39742. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.

Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Tubers received January 16, 1915. Quoted notes by Mr. Roig.

39741. "(No. 213.) *Centauro;* pale yellow inside; from Imias, Oriente; yielding 19,130 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39742. "(No. 92.) *Tornasol;* yellow. From Puerto Principe, Camaguey; yielding 9,918 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39743 to 39798. PRUNUS SERRULATA Lindl. Amygdalaceæ.

Flowering cherry.

From Tokyo, Japan. Presented by Mr. E. H. Wilson, Arnold Arboretum. Cuttings received January 15 and 23, 1915. Quoted notes by Mr. Wilson.

A collection of named varieties of Japanese flowering cherries. These are from the collection owned by the municipality of Tokyo, and dried flowering specimens are now in the herbarium of the Arnold Arboretum. The supplementary serial numbers are Wilson's collection numbers.

39743 and 39744.

"To be grown on the ordinary Japanese cherry stocks."

39743. No. 2. **39744.** No. 3.

39745. No. 4. "To be grown on *Prunus serrulata sachalinensis* stock."

39746 to 39798.

"To be grown on the ordinary Japanese cherry stocks."

39746. No. 5. **39748.** No. 7.

39747. No. 6. **39749.** No. 8.

39743 to 39798—Continued.

39750. No. 9.
39751. No. 10.
39752. No. 11.
39753. No. 12.
39754. No. 13.
39755. No. 14.
39756. No. 15.
39757. No. 16.
39758. No. 17.
39759. No. 18.
39760. No. 19.
39761. No. 20.
39762. No. 21.
39763. No. 22.
39764. No. 23.
39765. No. 24.
39766. No. 25.
39767. No. 26.
39768. No. 27.
39769. No. 28.
39770. No. 29.
39771. No. 30.
39772. No. 31.
39773. No. 32.
39774. No. 33.
39775. No. 34.
39776. No. 35.
39777. No. 36.
39778. No. 37.
39779. No. 38.
39780. No. 39.
39781. No. 40.
39782. No. 41.
39783. No. 42.
39784. No. 43.
39785. No. 44.
39786. No. 45.
39787. No. 46.
39788. No. 47.
39789. No. 48.
39790. No. 49.
39791. No. 50.
39792. No. 51.
39793. No. 52.
39794. No. 53.
39795. No. 54.
39796. No. 55.
39797. No. 56.
39798. No. 57.

39799 to 39802. Ipomoea batatas (L.) Poir. Convolvulaceæ. Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas. Received January 18, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

39799. "(No. 29.) *Camagucy;* yellow inside. From Puerto Principe. Yielding 41,982 arrobas per caballería."

39800. "(No. 118.) *Yema de huevo;* yellow. From Colon, Matanzas. Yielding 6,260 arrobas per caballería."

39801. "(No. 30.) *Colorado brujo;* yellow flesh. From Puerto Principe. Yielding 10,436 arrobas per caballería."

39802. "(No. 72.) *Chino blanco;* white. From Taco Taco, Pinar del Rio. Yielding 18,156 arrobas per caballería."

39803 to 39807. Zea mays L. Poaceæ. Corn.

From Oroya, Peru. Collected by Dr. J. N. Rose, United States National Museum.

"Corn obtained from Chola women, at an altitude of 12,200 feet, in July, 1914." (*Rose.*)

39803. Light yellow.
39804. Mixed blue and white.
39805. Red.
39806. Brownish.
39807. White.

39808 to 39816. ANNONA CHERIMOLA × SQUAMOSA. Annonaceæ.

Atemoya.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received January 11, 1915.

Cuttings of the *atemoya*, a new hybrid between the cherimoya and the sugar-apple.

"In 1908, at the subtropical laboratory, Miami, Fla., the writer successfully hybridized the cherimoya and the sugar-apple, the sugar-apple and the custard-apple, the cherimoya and the mamon, and the mamon and the sugar-apple. Several hundred seedlings resulted from this work, part of which were planted out in 1910, the hybrids between the cherimoya and the sugar-apple showing remarkable vigor and thriftiness. In 1911, hybrid seeds of the same combination from a cross made in 1910 were brought to the Philippines and the seeds sown in March of the same year. These hybrids exhibited the same remarkable vigor, and some attained a height of 2.3 meters in one year and bloomed when they were 16 months old. No fruits resulted, however. This year (1913), in the course of the reorganization work at Lamao, where the plants are growing, it became necessary to transplant the hybrids, and their fruiting is on that account unfortunately delayed for another year." (*Wester, Philippine Agricultural Review, vol. 6, 315, July, 1913.*)

The further history of these hybrids is told in the Review for February, 1914: "The blossoming season of the cherimoya is somewhat in advance of that of the custard-apple, but owing perhaps in part to the shock and retardation due to the transplanting, a few flowers appeared in June on one of the transplanted hybrids. One of these was pollinated with pollen from the custard-apple (*Annona reticulata* L.), with the result that it set, and a fruit developed and ripened October 8, 1913. The following is a description of the fruit: Size small, weight 280 grams; length 7.7 cm., equatorial diameter 7.6 cm.; cordiform in shape, with prominent carpels and distinct areoles; exterior yellowish green, almost glabrous; skin very thick and tough; flesh white, tender, and melting, with a slight trace of fiber, juicy, subacid, rich, and aromatic; flavor excellent, very similar to a good cherimoya with a dash of the delicate sweetness of the sugar-apple; seeds 4 to 7, similar in shape to cherimoya seed, but darker colored. The fruit is rather small, but regular and well shaped, about the size of a sugar-apple, which was to be expected considering that the father parent, the cherimoya, was also undersized. With the employment of large-fruited cherimoyas for breeding work we may also anticipate a progeny with larger fruits. The *atemoya* plants, of which there are 23 that have not yet fruited, are very similar in appearance to the cherimoya, and the fruit is also practically identical with the prominent-carpelled cherimoyas. Superior to the sugar-apple, it is not claimed that the *atemoya* is an improvement upon the cherimoya, but it has been hoped by crossing the cherimoya with the sugar-apple the excellent flavor of the subtropical cherimoya, which does not succeed well in the low latitudes near the Equator, might be imparted to the progeny, and that the other parent from the lowlands would impart to it adaptability to a tropical climate. It would seem that this anticipation has been realized in the above instance. The name *atemoya*, which is here being proposed for this new race of fruits, is derived from a combination of one of the old original names of the sugar-apple, *Ate pannicensis* (quoted from Hernandez, in his work 'Nova Plantarum, Animalium et Mineralium Mexicanorum Historia,' published in 1651), and cherimoya." (*Wester.*)

Of the nine plants represented by cuttings, No. 4 [S. P. I. No. 39809] represents the plant which fruited in 1913; the remainder first bore fruit in 1914.

39808. No. 3. "This proved to be one of the best among the hybrids that fruited this season." (*H. T. Edwards.*)

39809. No. 4. "Fruited last year." (*H. T. Edwards.*)

39810 to 39816.

"These proved to be the best among the hybrids that fruited this season." (*H. T. Edwards.*)

39810. No. 5.
39811. No. 6.
39812. No. 11.
39813. No. 12.
39814. No. 14.
39815. No. 16.
39816. No. 17.

39817 to 39819.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received January 16, 1915. Quoted notes by Mr. Hamilton.

39817. CYMBIDIUM SUAVE R. Brown. Orchidaceæ.

Distribution.—An epiphytal orchid with narrow leaves 1 foot long and racemes of red-blotched greenish flowers, found along streams in Queensland and New South Wales.

39818. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

"Large-fruited passion fruit. Season 1914."

39819. RUBUS sp. Rosaceæ. **Wild raspberry.**

"Wild raspberry, *Evelyn Table-land No. 2.*"

39820 to 39826. PRUNUS SERRULATA Lindl. Amygdalaceæ. Flowering cherry.

From Tokyo, Japan. Presented by Mr. E. H. Wilson, Arnold Arboretum. Cuttings received January 15 and 23, 1915.

"To be grown on the ordinary Japanese cherry stocks." (*Wilson.*)

39820. No. 58.
39821. No. 59.
39822. No. 60.
39823. No. 61.
39824. No. 62.
39825. No. 63.
39826. No. 64.

39827. FICUS SYCOMORUS L. Moraceæ. Fig.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received January 26, 1915.

"No. 3. Var. *beledi.* A variety which is most commonly eaten at Alexandria." (*Brown.*)

"The tree is cultivated in Egypt and is identical with the sycamore of Scripture. *Ficus sycomorus*, or the Egyptian fig, seems to be invariably infested with the insect *Sycophaga crassipes*, which is the same insect supposed to effect caprification in Malta, according to Rev. T. F. Marshall. This fig never produces ripe seed in Egypt, though it has been introduced from the earliest times. Not only are the ancient coffins made of the wood, but it was adopted as the sacred 'Tree of Life.' It probably came from Yemen, where Prof. Dr. Schweinfurth saw many seedling trees grown spontaneously. The tree bears three crops per annum, in May, June, and August–September. Boys cut off the top of the

figs of the first two crops only. The figs have no pleasant flavor until the operation has been performed; then the figs become very sweet, but remain smaller than when cut open. The object is to let the insect escape. Those that are left become watery and tasteless and are full of namoos or Sycophaga. The instrument used in Egypt for removing the 'eye' or top of the sycamore fig is a kind of thimble made of iron plate ending in a spatula like a finger nail. It is fixed on the thumb of the right hand. The operation is made only on fruits which shall be picked the following day. The day after the operation the fig is quite ripe. The male flowers in those figs are all aborted and the females never have perfect seeds. The figs of the third generation are larger, of an agreeable taste, and sweet scented; but they are not operated upon, only because in August and September, though the trees are much fuller of fruit than in May and June, the people have so much to do at that time. They are seldom sold and only eaten by the owners of the trees, or else they are abandoned to the field mice, birds, and dogs, which latter are very fond of them. These *nilg* fruits are full of Sycophaga. It is a very interesting fact that Pliny also describes the process as closely corresponding with this modern method." (*Muschler, Manual Flora of Egypt, vol. 1, p. 248.*)

For an illustration of this remarkable tree, see Plate II.

39828 and 39829.

From Rome, Italy. Presented by Dr. Gustav Eisen. Cuttings received January 26, 1915. Quoted notes by Dr. Eisen.

39828. Ficus sp. Moraceæ. **Fig.**

"*Harrar.* A fig from Abyssinia, most interesting and different from *Ficus carica.* Possibly a variety of *Ficus pseudocarica.* Fruit medium; outside violet brown, pulp reddish brown-vermilion, brilliant. Sweeter and better flavored than any other variety when fully ripe. Growth of branches somewhat pendent, leaves like *Broussonetia papyrifera.* Abundant bearer and hardy. Suited, I think, to Texas, Arizona, and southern California. May also do well in some other parts of the South, as it can stand considerable summer rain."

39829. Malus sylvestris Miller. Malaceæ. **Apple.**
(*Pyrus malus* L.)

"*Limoncella* or *Limoncello* apple. Middle and southern Italy, especially Naples down to and including Sicily. The only apple adapted to a warm and dry climate, at the same time possessing qualities which compare favorably with those of good northern apples. It is the best variety of apple grown in Italy for the general market. Medium or below medium, apex truncate, constricted below the apex, wider at base. Oblong, much longer than wide. Stalk short, slender, core long, narrow, solid, with very few seeds, flesh solid, white, sweet and subacid, crisp and juicy. Color of skin lemon yellow, shaded to a very slight pinkish flush. Flavor strong, agreeable, resembling that of certain red Cabernet grapes. Very fine shipper. Ripe from the end of November to February. This variety is not to be preferred to our better American apples in the Northern States, its value consisting in its adaptability to warm countries where the northern apples do not thrive. Should do well in California, Arizona, and Texas in localities with deep and rich soil. It is superior to any California apples grown on the central and southern plains and compares well with those grown in the mountains, except as to size. Retails at 35, 45 to 50 centesimi a kilo, or from ½ to 1 cent American each, more or less, according to size."

39830. HOLCUS HALEPENSIS L. Poaceæ. **Johnson grass.**
(*Sorghum halepensis* Pers.)

From Kirkee, Bombay, Poona, India. Presented by Mr. W. Burns, Ganeshkhind Botanical Gardens, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received January 26, 1915.

39831 to 39833. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Tubers received January 25, 1915. Quoted notes by Mr. Roig.

39831. "No. 75. *Cascarillo;* white. From Madruga, Havana. Yielding 23,791 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39832. "No. 199. *Picadito;* white. From Trinidad, Santa Clara. Yielding 12,617 arrobas (of 25 pounds each) per caballería (33⅓ acres.)"

39833. "No. 98. *San Pedro blanco*, white. From Taco Taco, Pinar del Rio. Yielding 25,217 arrobas (of 25 pounds each) per caballería (33⅓ acres)."

39834. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

From Guemes, Argentina. Presented by Mr. Henry F. Schultz, through Mr. L. J. Keena, American consul general, Buenos Aires. Received January 23, 1915.

"The cherimoya was introduced into Campo Santo from Peru about 50 years ago, and while the famous 'oldest residents,' who heard the tales of the original importers, claim that the fruits have degenerated greatly, it must be admitted that the quality of the present-grown cherimoyas in this region is very fine indeed. I have never eaten as good cherimoyas in Central America or in the United States as are produced here; their flavor and aroma are exquisite and their texture velvety and most delicious. The beautifully fragrant, creamlike pulp melts in the mouth like the best ice cream, and, were it not for the somewhat objectionable seeds, a finer fruit could hardly be imagined. After sampling the locally produced cherimoya I feel no hesitancy in withdrawing the statement which I have made in the States, before visiting this country, that cherimoya culture had no important future in the United States. California can undoubtedly produce at least as good cherimoyas as are raised in this country, and as soon as people acquire a taste for them and learn to know and appreciate the fruit cherimoya culture will become quite an important addition to horticulture in that State." (*Schultz.*)

For detailed information, see report from the American consul, dated December 18, 1914.

39835. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Rome, Italy. Presented by Dr. Gustav Eisen. Received January 26, 1915.

"A different variety from those sent before (S. P. I. No. 34698). Hardy, seeds smaller." (*Eisen.*)

39836. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ.
(*Rottboellia exaltata* L. f.)

From Sibpur, near Calcutta, India. Presented by the superintendent, Royal Botanic Garden. Received January 23, 1915.

Distribution.—An annual grass with stems 4 to 10 feet high, ranging throughout India, ascending to 7,000 feet in Gurhwal.

39837. ADENOPHORA VERTICILLATA Fisch.

From Harbin, Manchuria. Presented by Mr. Lewis S. Palen. Received January 18, 1915.

"Chinese *Ssu yeh ts'ai*, or 'Four-leaf plant.' Sample taken in September, 1914, on the Sungari River, 50 miles above its confluence with the Amur. It grows all through the woods here and on the open plain, coming earlier in the spring than almost any other save the wild onion. About 6 inches to 1 foot high by the end of May. It makes a delicious green for stewing by the middle of May in a climate where the frost is not out of the ground more than 4 or 5 inches by the middle of April. If it could be introduced at home, it might prove of considerable value. It has an excellent flavor and is superior, in my estimation, to many of the greens used in America. We prefer it to spinach." (*Palen.*)

39838. MYRICARIA GERMANICA (L.) Desv. Tamaricaceæ.

From Darjiling, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens, Seharunpur, India, who procured it from Mr. G. H. Cave, Lloyd Botanic Gardens, Darjiling. Received January 23, 1915.

See S. P. I. No. 39630 for previous introduction and description.

39839 to 39844. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Grenoble, France. Presented by Mr. Thomas W. Murton, American vice consul. Received January 2, 1915.

All are late-blooming varieties from Tullins, Isere, the name of the orchard (*Clos*) from which the nuts came being given in each case.

"As instructed, I made a first trip, on June 23, to Tullins, Isere, and neighboring walnut-growing districts, where I located several fine, vigorous, healthy-looking specimens of the late-blooming variety of walnut trees, cuttings from which are desired later by the Department of Agriculture for experimental purposes.

"It will be my duty also to forward to this department at harvesting time samples of the nuts produced by these trees for comparison and possible sowing.

"This variety, though a good producer, is little appreciated by growers hereabouts, for the reason that the fruit it bears is lighter in weight than most other kinds and consequently not so profitable from a pecuniary point of view; indeed, there is a growing tendency on the part of the farmers in this region to eliminate all such trees from their plantations on this account. As a matter of fact, several of those that I have marked are destined to be cut down in the near future, and the probability is that little by little this particular species will disappear entirely from the region of the Isere to make way for the more esteemed and much preferred grafted *Mayette*, the cultivation of which has greatly increased within the past four or five years in and around Tullins, where several new orchards have been laid out independently of individual plantings.

"On the other hand, the fact should not be lost sight of that the fruit of the late-blooming walnut tree is fine in appearance, relatively large in size, bright in color of both shell and interior skin, and of good taste, although perhaps the meat is not so well nourished or as fine of flavor as the *Mayette* or *Franquette*, but in my opinion it compares favorably with the quality known as *Parisians*, and properly cared for and grafted should prove a good producer." (*Murton. Report dated at Grenoble, France, July 1, 1914.*)

39839. No. 1. Clos Masson.
39840. No. 2. Clos Durand.
39841. No. 3. Clos May.
39842. No. 4. Clos Lafarge.
39843. No. 5. Clos Durand.
39844. No. 6. Clos Bernardin (altitude 2,000 feet).

39845 to 39852. Saccharum officinarum L. Poaceæ. Sugar cane.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Cuttings received February 1, 1915.

"The following varieties are largely grown here." (*Edwards.*)

39845. Common *Negros purple.*
39846. *Pampanga dark purple.*
39847. *Luzon No. 1.*
39848. *Luzon No. 2.*
39849. *Cebu light purple.*
39850. *Inalmon.*
39851. *Laguna white.*
39852. *Pampanga light purple.*

39853. Opuntia sp. Cactaceæ. Prickly-pear.

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, Hawaii Experiment Station. Received February 1, 1915.

"A variety believed to have been introduced into Hawaii by Don Marin." (*Higgins.*)

"A number of years ago the station collected in Honolulu several slabs of an almost spineless cactus. Dr. W. T. Brigham states that he has known this cactus for a long time and that he believes it was introduced by Don Marin. Dr. Brigham suggests that this cactus be called the *Manini cactus* (the Hawaiian form of Marin). These cactus slabs were grown into plants, which after subsequent subdivision have developed into a hedge nearly 100 feet long.

"An opportunity offered to test the hardiness of this cactus in comparison with a number of other drought-resisting plants and several varieties of Burbank's cactus. All of these plants were set out on the island of Kahoolawe in an excessively dry region somewhat exposed to wind. At the end of six months the place was visited again, when it was found that none of the plants had grown except the Marin cactus, which was growing satisfactorily. In the few tests which the station has been able to make, this cactus, under dry conditions, has grown about three times as fast as the Burbank varieties.

"Plant averaging 6 to 8 feet in height, shrubby, and much branched. . . . Petals averaging 25, outer ones short and fleshy, inner ones long and thin, rose to pink in color. . . . The joint changes to a succulent and juicy fruit, 1½ to 2 inches long, 1 to 1½ inches wide, pear shaped to globose, areoles with numerous small spicules, claret red; pulp deep claret red, many seeds, watery and almost tasteless. Rapid growth, very productive, and best propagated from slab cuttings, since the seeds are liable to be cross-fertilized with the spiny Opuntias.

"Since this cactus is of rapid growth and comparatively free of spines, it is worthy of attention as an ornamental hedge and as a fodder plant." (*Report of the Hawaii Agricultural Experiment Station, 1914, p. 17 and 32.*)

39854 and 39855. Cucumis melo L. Cucurbitaceæ.

Muskmelon.

From Madrid, Spain. Presented by Señor Gregorio Cruz Valero. Received January 14, 1915. Quoted notes by Señor Valero.

39854. "Seeds of a single winter melon. This is cultivated here alternately with cereals in dry lands. It does especially well in dry farming. The earth is argillaceous, calcareous, and silicate to a great depth. In Tunis, after the cereal which precedes it is harvested, it receives in September or October a good working to a depth of 30 cm., to receive the water from the autumn rains. In February it is given another more superficial working, and at the coming of spring, the first of March or April, it is given a third working, preparatory to sowing. Sowing requires the opening of holes to a depth of 25 cm. or less. After this a layer of manure is placed in the holes to a depth of 4 cm., and then loose earth. On this four or five seeds are sown and covered with loose earth. The successive operations consist of continuous efforts to prevent the dust mulch from being lost and to avoid evaporation. During the growing season there is little rain and storms are rare. The distance between the hills is 2 to 2.25 meters, according to the condition of the earth, and about the same between the rows. The harvesting is done in September. The degree of ripeness at which the fruit should be separated from the plant is known by the fact that it is quite white and has reached the highest development, and before the odor is noticed. I have said that four or five seeds should be placed in each hill, but after germination, when they have reached a development of 25 to 30 cm., the two strongest, or the strongest plant, is left and the distance between the plants is made accordingly."

39855. "Mixed winter melon seed, selected from the same variety as S. P. I. No. 39854."

39856 to 39858.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received February 3, 1915. Quoted notes by Mr. Brown.

39856. Tamarix aphylla (L.) Karsten. Tamaricaceæ. **Tamarisk.**

"This is by far the best of the Egyptian species for cultivation as a timber tree on desert land. We have employed it largely as a wind and sand break, at the sewage farm at Khanka, which is situated on what was unreclaimed desert land. The cuttings were planted along shallow water channels, containing in one case chlorine equivalent to sodium chloride to the extent of 1,272 parts per million and in another case to the extent of 2,028 parts per million. *Tamarix aphylla* very rarely produces seed here."

Distribution.—A tree 20 to 30 feet high, found in Algeria and Egypt in northern Africa, and from Persia and Arabia eastward to India.

39857 and 39858. Ficus sycomorus L. Moraceæ. **Fig.**

39857. "Var. *Roumi;* usually eaten at Cairo."

39858. "Var. *Kilabi;* never eaten."

For an illustration of this remarkable tree, see Plate II.

39859. LOROMA AMETHYSTINA O. F. Cook. Phœnicaceæ. **Palm.**

From Santa Barbara, Cal. Presented by Mr. C. B. Hale, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received February 3, 1915.

"Seeds of a palm that has proved to be well suited for outdoor planting in California. It has been grown under several names, *Ptychosperma elegans*, *Seaforthia elegans*, *Archontophoenix alexandrae*, and *Archontophoenix cunninghamiana*. But after a study of the original descriptions of these genera and species, the California palm does not appear to be referable to any of them, and has to be described as new. A preliminary account is being published in the Journal of the Washington Academy of Sciences, with the name *Loroma amethystina*. Although the species is well known in California and is undoubtedly available through dealers under the different names, it may be worth while to make at least a limited distribution of seedlings from the original tree on which the new genus and species are being based. The type individual is in the collection of Mr. C. B. Hale, under the care of Mr. W. H. Morse. The palm is larger and has longer and more spreading leaves than the true *Ptychosperma* or *Seaforthia elegans* [S. P. I. No. 38112]. On the other hand, it is a smaller palm than the true *Archontophoenix alexandrae*. It may be worth while to have a considerable planting of this palm made at the new Miami garden, in order to test its adaptability to the local conditions. On account of the former confusion of names, we do not know whether the reports that have been made regarding the behavior of *Seaforthia* and *Ptychosperma* in Florida relate to this palm or to others." (*Cook.*)

39860 and 39861.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 3, 1915.

39860. ABIES SACHALINENSIS NEMORENSIS Mayr. Pinaceæ. **Sachalin fir.**

Wilson No. 7869.

The species is described as "a tree 130 feet high, native of northern Japan, Saghalien, etc., but so liable to injury by late spring frost in this country as to be of no value. It has the *nordmanniana* arrangement of leaf, but in the forward-pointing leaves, which are three-fourths to 1½ inches long and very white beneath, it resembles *A. veitchii;* buds white, resinous. Cones 2½ to 3½ inches long. Introduced in 1878 by Maries for Messrs. Veitch. I saw a tree about 16 feet high at Murthly Castle, near Perth, in 1906, but even there not in the best of health." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 117.*)

39861. TAXUS CUSPIDATA Sieb. and Zucc. Taxaceæ. **Yew.**

Wilson No. 7778.

"A tree 40 to 50 feet high in Japan, with a trunk girthing about 6 feet; in cultivation a low tree or spreading shrub; older bark reddish brown. Leaves one-half to 1 inch long, one-twelfth to one-eighth inch wide; linear, tapered rather abruptly at the apex to a fine point; rounded, and with a distinct stalk at the base one-twelfth inch long; dark green above, with a broad, tawny yellow strip composed of 10 to 12 stomatic lines on each side of the green midrib beneath. The leaves are arranged approximately in two ranks, and stand more or less erect from the twig, often forming a narrow V-shaped trough. Fruit red, as in *T. baccata.*

39860 and 39861—Continued.

"Native of Japan, introduced about 1855 by Fortune, and very hardy though slow growing. It thrives extremely well in the trying New England climate and is apparently one of the best evergreens introduced there. There are two distinct forms of it in cultivation, the one a tree, the other, var. *compacta*, a compact, low bush, wider than it is high. Whilst the general aspect is the same as that of the English yew, it can be distinguished by the marked yellow tinge of the under surface of the leaves, and by the longer, more oblong winter buds, with looser, more pointed scales." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 582.*)

39862 to 39864. LINUM spp. Linaceæ. **Flax.**

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received February 1, 1915.

39862. LINUM GRANDIFLORUM Desf.

Var. *roseum.*

39863. LINUM PERENNE L. 39864. LINUM CAMPANULATUM L.

39865. JACQUEMONTIA COELESTIS Planchon. Convolvulaceæ. **Nepal creeper.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Cuttings received February 6, 1915.

"The beautiful Nepal creeper; a free bloomer, not very tall growing. Flowers sky blue, quite showy." (*Regnard.*)

39866. CASTANEA sp. Fagaceæ. **Chestnut.**

From China. Presented by Rev. W. F. Hayward, American Church Mission. Received January 30, 1915.

39867. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received February 11, 1915.

39868. (Undetermined.)

From Monrovia, Liberia. Presented by Dr. C. C. Boone. Received January 20, 1915.

"Seeds of the best Liberian cherry." (*Boone.*)

39869. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ.
(*Cryptotaenia canadensis* DC.)

From Brooklyn, N. Y. Presented by Dr. C. Stuart Gager, director, Brooklyn Botanic Garden. Received February 11, 1915.

"*Mitsuba, Mitsuba-jeri*, a perennial herb of the order Umbelliferæ, growing wild in moist valleys, but much cultivated from seeds or by dividing the roots. In spring, young leaves come forth to a height of about 1 foot. They are eaten boiled, and the roots can also be eaten fried. One variety with fine threadlike petioles and shooting bushes 8 to 10 inches high is called *Ito mitsuba* (thread honewort)." (*Useful Plants of Japan, p. 12, No. 59.*)

Described by Mr. Kuwashima as one of the highest priced vegetables cultivated in Japan, and the young shoots are recommended as an excellent green salad.

39870 to 39874.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received February 12, 1915. Quoted notes by Mr. Harrison.

39870. (Undetermined.)

"Seeds of the Australian sour plum, a tree of palmlike habit of growth. The purple plums are formed in clusters on the bark of the tree."

39871. HICKSBEACHIA PINNATIFOLIA Mueller. Proteaceæ.

"*Red bush nuts.* This tree grows to the height of 30 or 40 feet, and the fruit is borne in racemes, attached to the bark and branches of the tree, each carrying 10 or 12 fruits. The flavor is not quite so good as the Queensland nut, *Macadamia ternifolia*, nor does it keep so well, but nevertheless they are sold in some fruit shops here at 12 cents per pint. I do not think they have been cultivated anywhere in the United States, but could easily be grown in any of the warm Southern States."

39872. HOVEA LINEARIS (Smith) R. Brown. Fabaceæ.

"A handsome blue-flowered leguminous shrub, 8 to 10 feet in height. Stock eat the foliage, and it is also a good fertilizing plant, rich in ammonia."

39873. KENNEDYA RUBICUNDA (Schneev.) Vent. Fabaceæ.

"A long, coarse vine, bearing a profusion of red flowers. The foliage is eaten occasionally by stock. It would be useful for arbors and should prove useful as a fertilizing plant. Very rich in ammonia."

39874. STERCULIA sp. Sterculiaceæ.

"A handsome ornamental shrub 12 to 15 feet in height. Grows in sandy soil. The pods, which are several inches in circumference, form in clusters of 5 to 7; when ripe they turn scarlet and when open the round, black seeds adhere to the edges of the capsule."

39875. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.

From Upper Burma, India. Presented by Mr. F. Kingdon Ward. Received February 8, 1915.

"Grown in Shan villages on the plain of Hkamti Loong (1,200 feet), but scarcely cultivated. Soil alluvial and sandy; with proper manuring and pruning would probably give an excellent fruit. Very juicy. Seems to differ from the ordinary Indian fruit." (*Ward.*)

39876. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Manila, Philippine Islands. Presented by Mr. Cleve W. Hines, sugar technologist, Bureau of Agriculture, Manila. Cuttings received February 15, 1915.

"*Negros purple morada.* One of the main reasons why this cane is quite popular here is on account of its soft shell or outer tissue, which facilitates its milling in the small native plants and gives a greater percentage of juice than the finer varieties. Improved varieties have given much better results in the large modern factories as well as increased yields in the fields." (*Hines.*)

39877 and 39878.

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received February 16, 1915.

39877. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

39878. PENNISETUM GLAUCUM (L.) R. Brown. Poaceæ. **Pearl millet.** (*Pennisetum typhoideum* Rich.)

39879. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From China. Presented by Mr. W. Paddock, Ohio State University. Received February 11, 1915.

39830. GARCINIA MORELLA (Gaertn.) Desr. Clusiaceæ.

From Cienfuegos, Cuba. Presented by Dr. Emilio Cabada. Received February 16, 1915.

See S. P. I. Nos. 12693 and 17995 for previous introductions and description.

"Produces a small edible fruit, similar in shape and size to a cherry. The tree reaches a height of 10 to 15 meters and produces the best quality of Cambodian gamboge." (*L'Horticole Coloniale, Catalogue des Plantes Economiques pour les Colonies.*)

39881 to 39886. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Grenoble, France. Presented by Mr. Thomas W. Murton, American vice consul. Bud sticks received February 19, 1915.

See S. P. I. Nos. 39839 to 39844 for description.

All are late-blooming varieties from Tullins. Isere, France, the name of the orchard (Clos) from which the nuts came being given in each case.

39881. No. 1. Clos Masson.

39882. No. 2. Clos Durand.

39883. No. 3. Clos May.

39884. No. 4. Clos Lafarge.

39885. No. 5. Clos Durand (bis).

39886. No. 6. Clos Bernardin (altitude 2,000 feet).

39887. ANNONA RETICULATA L. Annonaceæ. **Custard-apple.**

From Quilimane, Portuguese East Africa. Presented by Mr. E. H. Heron, acting director of agriculture, Beira, Mozambique. Seed received February 2, 1915, as *A. senegalensis.*

"These prove to be seeds of *A. reticulata*, a cultivated species introduced into Africa from America. *A. senegalensis* is not as good as the ordinary cultivated species of *A. reticulata* and *A. squamosa.* It is, however, valuable on account of the size to which it grows as stock for other species, and it is of special botanical interest, since all other edible annonaceous fruits are of American origin, while it is African." (*Safford.*)

39888 and 39889. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Turin, Italy. Presented by the American consul. Received February 11, 1915.

39888. "No. 19. *Carmagnola.* Hemp is cultivated in the Provinces of Turin and Cuneo between Carmagnola and the Po. It is said that no other country in the world can produce such fiber and seed. Some botanists have classified Carmagnola hemp as a distinct variety

39888 and 39889—Continued.

under the name *Cannabis sativa excelsior*. The area under cultivation is 2,314 acres, and the production of fiber 11,110 tons (?). Carmagnola hemp is more productive and more vigorous than that of Emilia, and it is said to be resistant to Orobanche. Its stalks are 3 to 4 meters high. It is sown by hand, pulled by hand, and water retted. The yield is about 1,000 pounds per acre. Fiber of inferior quality is obtained from seed stalks." (*From abstract of report on Agriculture and Industries of Piedmont by Major Percy Chapman, Textile Mercury, October, 1914.*)

"It grows somewhat taller and thicker in stalk than the other varieties of hemp cultivated in this vicinity and is the most in demand by planters." (*Charles B. Perry, American consul, report of January 21, 1915.*)

39889. "No. 30. *Bologna* hemp is grown on the rich alluvial soils of the lower Po Valley, in the Provinces of Bologna, Ferrara, Modena, Emilia, and Rovigo, in northeastern Italy. Greater care is given to the crop in this region than anywhere else, and the result is hemp of the finest quality and highest price on the market. Nearly 200,000 acres are devoted to the crop each year, and the annual production is more than 80,000 tons. A 2-year rotation with wheat is practiced, the land being plowed 12 to 18 inches deep in June immediately after the wheat is harvested and thoroughly cultivated until the hemp seed is sown the following February. The crop is cut by hand, water retted, and broken mostly by machinery. Seed produced in Ferrara or Bologna gives a hemp with a light, hollow stick, while the Carmagnola variety gives a more woody stick with a smaller percentage of fiber." (*L. H. Dewey.*)

"*Ferrara* hemp is the common name of the Bologna type most grown in the Piedmont district." (*Charles B. Perry, American consul, report of January 21, 1915.*)

39890. CUCURBITA sp. Cucurbitaceæ.

From La Paz, Bolivia. Presented by Dr. J. N. Rose, National Museum, Washington, D. C. Received February 15, 1915.

"Seeds of a large pumpkinlike plant, obtained from the market at La Paz, Bolivia." (*Rose.*)

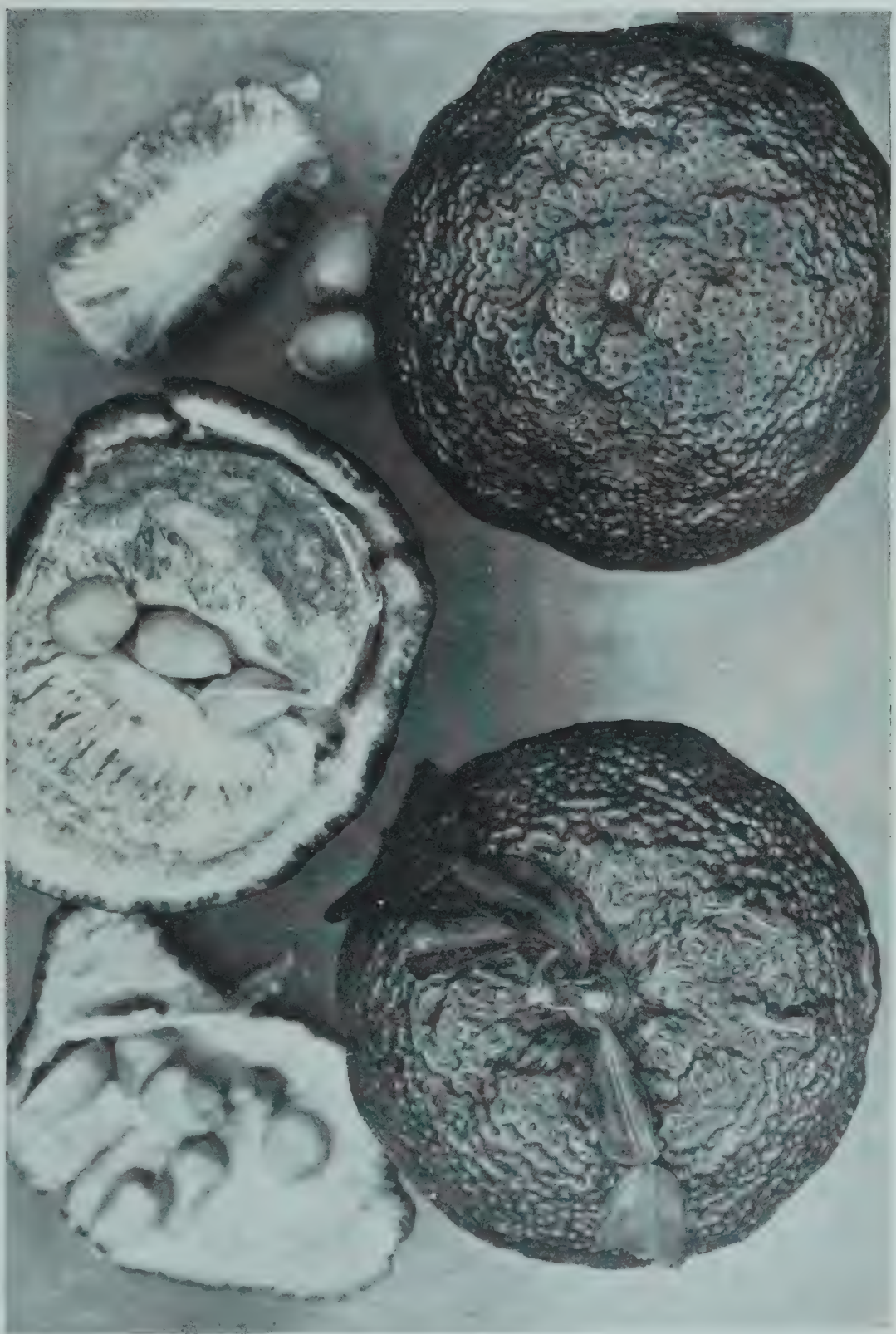
"A large globose, pumpkinlike fruit, found in the markets of Peru and Chile and said to have been cultivated in prehistoric times by the natives of those regions; highly esteemed by the modern inhabitants; smooth outside, with yellow flesh, and large seeds which are used as articles of food. Suitable for the warmer regions of the United States where irrigation is practiced." (*Safford.*)

39891. CITRULLUS VULGARIS Schrader. Cucurbitaceæ.

Watermelon.

From Burttholm, Vereeniging, South Africa. Presented by Prof. J. Burtt Davy, Transvaal Maize-Breeding Station. Received February 17, 1915.

"Seeds of the true *Tsama* melon, sent to me from Kuruman as having been collected in the heart of the Kalahari Desert. I send these because there is so



AN INTERESTING HARDY CITRUS FRUIT FROM KANSU, CHINA (CITRUS SP., S. P. I. NOS. 39897 AND 40039).

A peculiar loose-skinned fruit with light yellow rind, agreeable sharp-sour taste and lemon odor. The trees are thrifty and apparently prolific. This species is found at altitudes of 2,000 to 4,500 feet in a region where persimmons, figs, pomegranates, walnuts, and pears are cultivated. Photographed by Frank N. Meyer, October 20, 1914 (P13140FS).

THE TANGUTIAN BUSH ALMOND (AMYGDALUS TANGUTICA, S. P. I. NO. 39898).

A very interesting bush almond from altitudes of 4,000 to 10,000 feet in the Province of Kansu. The fruits are very variable in size, with generally small stones, the kernels of which are used for oil extraction. The species may have value as a hedge plant for dry regions and also as an ornamental spring-flowering shrub in the cooler semiarid regions of the United States. The introduction of this species may suggest to breeders the possibility of producing a commercial bush almond. Photographed by Frank N. Meyer, Siku, Kansu, China, November 15, 1914 (P13093 FS).

much seed of other desert melons now distributed under the name *Tsama* that it is often doubtful whether people have the real thing." (*Davy.*)

This is the great forage melon of the Kalahari, described by explorers as of considerable value for cattle feed in that region.

39892. Colocasia antiquorum Schott. Araceæ. Egyptian taro.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Department of Agriculture, Gizeh branch. Tubers received February 20, 1915.

"The common name of the plant in Egypt is *Qolqas*. The plant is just coming into flower (October 6). It is an important crop in some districts of this country." (*Brown.*)

"This plant is of the same type as the specimens received from Syria and Madeira, as well as from some other parts of the world. It is inferior in quality to the dasheen." (*R. A. Young.*)

39893 to 39895.

From Burma, India. Collected by Mr. F. Kingdon Ward. Received February 8, 1915. Quoted notes by Mr. Ward.

39893. Eleusine coracana (L.) Gaertner. Poaceæ. Ragi millet.

"Grain grown to supplement maize and mountain rice for making flour. Grown by the Marus, Nmaihka Valley, on dry hillsides, not irrigated, 4,000 to 5,000 feet. Soil from disintegrated granite. Also by Lisus in Salwin Valley under similar conditions."

39894. Nicotiana tabacum L. Solanaceæ. Tobacco.

"Tobacco grown by the Marus, far Upper Burma, Valley of Nmaihka or eastern Irrawaddy. Altitude 4,000 to 5,000 feet. Soil from disintegrated granite. Monsoon rains in the summer, very hot. Winter cold but no snow; lies too low."

39895. Zea mays L. Poaceæ. Corn.

"Maize grown by Lisus and Marus, Valley of Nmaihka and eastward, 5,000 to 8,000 feet. Poor soil from disintegration of granite rocks, but soil previously covered with forest which is cut and burnt on the spot. Heavy summer rainfall. Maize ripens in July and August."

39896. Garcinia mangostana L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Cuttings received February 23, 1915.

39897 to 39924.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Cuttings (except of 39914) received February 23, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

39897. Citrus sp. Rutaceæ.

"(No. 1221. From near Lianjapa (near Hsiku), Kansu, China. October 19, 1914.) A peculiar species of citrus growing into a large tree, bearing loose-skinned, round, flattened fruits the size of mandarin oranges. Color of rind, light yellow; rind full of oil glands, smelling like a fine lemon; segments separating easily; fairly juicy and of an agreeable

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

sharp sour taste; contains plenty of large seeds. These sour mandarin fruits make a very pleasing 'ade cut up, rind and all, in a tumbler of water with some sugar added. They also taste well when cut up in slices in hot tea, while a few pieces of rind added to a soup or stew give a novel and agreeable flavor.

"The trees are of thrifty growth, making large heads of dark-green foliage; they are prolific bearers, apparently; young shoots armed with large spines. They are not grafted or budded, but propagated from seeds only. This citrus is found at altitudes of 2,000 to 4,500 feet, and where they grow one finds the following trees cultivated: *Diospyros kaki; Ficus carica; Punica granatum; Juglans regia; Pyrus sinensis; Morus alba; Hovenia dulcis; Ligustrum lucidum; Trachycarpus excelsus;* and *Phyllostachys* sp. Of value, possibly, as a tree for the home garden in sections north of the citrus belt proper."

For an illustration of this interesting fruit, see Plate III.

39898. AMYGDALUS TANGUTICA (Bat.) Korsh. Amygdalaceæ. **Almond.**
(*Prunus tangutica* Koehne.)

"(No. 1222. Village of Lantsai (near Hsiku), Kansu, China. October 28, 1914.) A bush almond found in rocks and cliffs along the right bank of the Hsiku River, collected at an altitude of 4,200 feet. Shrubs from 4 to 10 feet high, in sheltered places reaching even a height of 20 to 25 feet; densely branched, branches often zigzag running and ending in spines. Foliage small and of a glaucous green color. Fruits very variable in size, looks, and shape; skin downy and thin; stones ranging in size from that of a cherry stone up to a good-sized apricot stone, of many forms, some round and quite smooth, others pointed or heart shaped and grooved like peach stones, shells moderately thin, kernels small on the average and quite bitter; they are, however, eagerly collected by ground squirrels. Here and there local Chinese also collect them and express a clear oil from the kernels for culinary purposes. These kernels are also sparingly eaten after having been boiled first, so as to remove part of the bitter flavor.

"This Tangutian almond occurs in many places in the Province of Kansu, growing at altitudes of 4,000 to 10,000 feet. They are able to withstand a great degree of drought, cold, and dry heat. It is recommended as a factor in certain hybridization experiments, trying to create hardy bush almonds. As a stock for almonds it might be tested, but since it throws up many shoots from the base it may not have any commercial value. As a hedge plant for dry regions it also possesses value, while as an ornamental spring-flowering shrub it possibly could be employed in gardens and parks in the cooler parts of the semiarid United States. Chinese name *Yeh hsiao hsing*, meaning 'wild small apricot'; also *Mao t'ao*, meaning 'hairy peach.'"

For an illustration of these almonds as grown in China, see Plate IV.

39899. AMYGDALUS PERSICA POTANINI (Bat.) Ricker. Amygdalaceæ.
(*Prunus persica potanini* Batal.) **Potanin's peach.**

"(No. 1223. From village of Tchutsaitze (near Hsiku), Kansu, China. October 29, 1914.) A wild peach of the *davidiana* type, but differing from the last in various points. Collected at the base of sheltered mountains at an altitude of 4,300 feet. A tall shrub or even small tree, up to 30 feet in height bark of stem or trunk dark reddish

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

brown and quite smooth in the younger shoots; leaves like those of *Amygdalus davidiana*, but often broader in the middle and always less pointed. Fruits of round elongated form; skin covered with a heavy down, no edible flesh; stones of elliptical shape, grooves longer than in *A. davidiana*, shells very hard and thick, kernels elongated and relatively small. Found growing at altitudes of 4,000 to 7,000 feet, in side valleys away from the Hsiku River; thrives especially well in sheltered and warm mountain pockets. Of value especially like *A. davidiana* as a stock for stone fruits and possibly able to stand even more dry heat; also recommended as an ornamental spring-flowering tree, especially for the drier parts of the United States. Chinese name *Mao t'ao*, meaning 'hairy peach.'"

39900 to 39904.

From near Kagoba (south of Hsiku), Kansu, China. Collected November 1, 1914.

39900. POPULUS SUAVEOLENS PRZEWALSKII (Maxim.) Schneider. Salicaceæ. Poplar.

"No. 1224. A poplar, growing into a tall tree with a trunk of ashy gray color, looking quite distinct from any ordinary poplar; leaves large and somewhat grayish underneath. Found mainly where the soil retains its moisture. Of value as a stately avenue and park tree for those sections of the United States where winters are not too severe. Collected at an elevation of 8,000 feet. Chinese name *Shui pai yang*, meaning water white poplar.'"

For an illustration of these poplar trees as found growing in China, see Plate V.

39901. SALIX sp. Salicaceæ. Willow.

"No. 1225. A willow with scaly bark, mostly seen as a shrub, but grows also into a medium-sized tree. Found on exposed mountain plateaus up to 11,000 feet. Of value for windbreaks in northern localities."

39902. PRUNUS BRACHYPODA Batalin (?) Amygdalaceæ. Cherry.

"No. 1226. A wild cherry growing into a tall shrub or small tree, collected at an altitude of 9,000 feet. Bears fringed leaflets at base of leaf petioles. Colors up brilliantly in autumn. Of value possibly for breeding purposes, as a stock, and as an ornamental garden shrub for cool regions."

39903. EUONYMUS sp. Celastraceæ.

"No. 1227. A spindle wood, growing into a medium-sized tree with a dense, well rounded-off head of branches. Leaves round, elliptical, of opaque green color, and somewhat wrinkled. Collected at an altitude of 8,000 feet. Of value as an ornamental park tree for the cooler sections of the United States."

39904. FICUS sp. Moraceæ. Fig.

"No. 1228. A fig found growing in rocks, apparently of a shrubby nature; only seen once. Leaves quite elongated and rough to the touch. Collected at an altitude of 6,000 feet. Of value possibly in regions where the winters are not too severe."

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39905 to 39911.

From near Paodji (near Hsiku), Kansu, China. Collected November 6 and 7, 1914.

39905. DIPELTA YUNNANENSIS Franchet. Caprifoliaceæ.

"No. 1229. A shrub of the appearance of a Lonicera, but bearing triangular, winged fruits. Found in a few places on overgrown mountain slopes at altitudes of 7,000 feet. Of value possibly as an ornamental garden shrub."

39906. DEUTZIA sp. Hydrangeaceæ.

"No. 1230. A Deutzia of vigorous growth, from 6 to 10 feet tall, having large, silvery gray leaves, found between scrub on open mountain slopes at altitudes between 6,000 and 8,000 feet. Of value possibly as an ornamental garden shrub."

39907. CORYLUS CHINENSIS Franch. Betulaceæ. **Hazelnut.**

"No. 1231. A hazelnut growing into a tree 80 to 100 feet tall having a trunk often a few feet in diameter. Bark reddish brown and peeling off in loose layers like that of a birch. Leaves large, of elliptical shape, petioles long, nuts small and each inclosed in a protruded involucre; they are borne in clusters from two and three up to seven and eight. Shell very thick; kernels small, but edible. This hazel tree bears masses of catkins at the time the leaves come down; it looks very much like a birch or an alder, and, aside from its having a utilitarian use as a nut-bearing tree, it also has a decided value for ornamental purposes, especially when planted in a group or a grove of some extent. Through selection and by hybridization possibly strains can be obtained bearing larger nuts with thinner shells and possessing commercial value. The climate where these hazels thrive is not a very severe one, and the trees probably will not be able to stand extreme temperatures. Collected at an altitude of 7,000 feet."

39908. HYDRANGEA sp. Hydrangeaceæ.

"No. 1232. A shrub of compact and robust growth. Collected in a grove of tall red birches, at an altitude of 8,000 feet. Of value as an ornamental shrub for shady places for the cooler sections of the United States."

39909. CORYLUS TIBETICA Batalin. Fagaceæ.

"No. 1233. A small tree found in between tall scrub on protected mountain sides at 8,000 feet altitude. Bears burs like those of a chestnut, which contain chinkapinlike nuts; it bears, however, also catkins like a hazel or an alder when it is leafless. Leaves somewhat like those of a chestnut, but of a thinner and less persistent structure. Of value possibly as a new nut-bearing tree, fit for regions where the winters are not too severe."

39910. RIBES sp. Grossulariaceæ. **Currant.**

"No. 1234. A currant of very vigorous growth, collected on a sheltered mountain side at an altitude of over 7,000 feet. The shrubs are of open growth and reach a height of 25 feet. Of value possibly for hybridization purposes."

A KANSU POPLAR (POPULUS SUAVEOLENS PRZEWALSKII, S. P. I. No. 39900).

A stately tall poplar with an ashy-gray trunk and large leaves, grayish beneath; a distinct type. It grows at an altitude of 8,000 feet in Kansu, in moist locations. Called by the Chinese the "Water White poplar." Photographed by Frank N. Meyer, November 1, 1914 (P13165FS).

A TALL-GROWING GOOSEBERRY FROM KANSU, CHINA (RIBES ALPESTRE GIGANTEUM, S. P. I. NOS. 39916 AND 40022).

A remarkably spiny tall wild gooseberry, growing at altitudes of 7,000 to 9,000 feet in the Province of Kansu. Suitable as a hedge plant. The berries are elongated, of medium size, and hang on the bush throughout most of the winter. These fruits are preserved by American missionaries and make a delicious tart jam. Photographed by Frank N. Meyer, near Yangsa, Kansu, November 29, 1914 (P13149FS).

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39911. PRUNUS SETULOSA Batalin. Amygdalaceæ. Cherry.

"No. 1235. A wild cherry growing into a tree 40 to 60 feet tall, with a good-sized trunk. Leaves somewhat tomentose. Collected at an altitude of 7,000 feet. Of value possibly as a stock and for breeding purposes."

39912. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

"(No. 1236. Near Kuatsa, on the Hsiku River, Kansu, China. November 10, 1914.) A remarkably large and beautiful persimmon of very flat shape and bearing some furrows on top Color bright deep orange; seedless; nonjuicy; of excellent keeping qualities; can be eaten fresh or dried; not free from pucker. Quite a rare variety. Local name *Mo mo shih tzŭ*, meaning 'loaf of bread persimmon,' though many different forms pass under that name."

39913. DIOSPYROS KAKI L. f. Diospyraceæ. Persimmon.

"(No. 1237. Near Hsiku, Kansu, China. November 14, 1914.) A persimmon of square shape, bearing generally a constriction close to the peduncle, also often furrowed vertically. Of light orange color, seedless; nonjuicy; a very good keeper, but of astringent properties when eaten fresh, therefore consumed when roasted or steamed, by which processes the pucker disappears for the greater part; also much eaten dried. Chinese name *Fang shih tzŭ*, meaning 'square persimmon.'"

39914. DAPHNE TANGUTICA Maxim. Thymelæaceæ.

"(No. 1238. Near Hsiku, Kansu, China. November 17, 1914.) A very beautiful evergreen bush of low and compact growth; foliage dark green and leathery; occurring on stony débris in sheltered ravines and in open woodlands at altitudes of 5,000 to 10,000 feet. Flowers white, with a slight violet tinge, faintly scented, appearing in early spring, though some stray ones can be seen in autumn also. Berries bright red and ripe at the end of May and in early June. This shrub is of high decorative value; it can be employed especially near houses and low walls, and may succeed in sections of the United States where the winters are not too severe, like Long Island, for instance. The plant is apparently easy to propagate from root cuttings, for roots that were seen sticking out amidst pebbles and stony débris and of which the top parts had been chopped off were observed to put forth new sets of branches. In the mountains to the north of Hsiku, where this Daphne occurs in abundance, one also finds great quantities of *Buxus sempervirens* and an evergreen species of Pteris, while ivy clings here and there against the rocks, all this often conveying the impression as if man had brought these plants together here and had made a wild garden of it."

"A low, densely branched, evergreen shrub, of close, neat, sturdy habit; young shoots hairy. Leaves leathery, thick, densely arranged toward the end of the twig; oval inclined to obovate; 1 to 2 inches long, one-half to three-fourths inch wide; stalkless, the base tapered, the apex rounded and notched, margin revolute; dark glossy green, smooth. Flowers produced during early May in a crowded cluster 3 inches across, terminating the branch, each flower borne on a short, conspicuously brown-felted stalk; perianth tube smooth, five-eighths inch long; rosy purple outside, glistening white, tinged with purple, inside; lobes ovate, one-third inch long. Fruit bright red.

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

"Native of western China; discovered by Mr. A. E. Pratt near Tachienlu, at 13,500 feet altitude. Introduced from the same spot by Wilson in 1901. I saw this delightful little bush flowering in the Coombe Wood nursery in April, 1909, and it was exquisitely fragrant, like lilac. The plant is of compact habit and will probably not grow much more than 1 to 2 feet high. It is apparently very hardy and if it can be propagated in sufficient quantity will make a valuable addition to cultivated Daphnes. It has some affinity with *D. odora*, but is easily distinguished by its thick, much smaller notched leaves and the shaggy young shoots and flower stalks." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 474.*)

Rooted plants.

39915 and 39916.

From near Taochow, Kansu, China. Collected November 25, 1914.

39915. LONICERA sp. Caprifoliaceæ. Honeysuckle.

"No. 1240. A shrubby honeysuckle of somewhat spreading low growth, occurring in loess cliffs and on table-lands at altitudes of 8,000 to 10,000 feet. Leaves round, elliptical, small; branches angular, with the bark coming off in long, slender strips; berries red. This shrub is apparently very resistant to cold and to drought. Of value as an ornamental and as a low hedge shrub for the colder semiarid sections of the United States."

39916. RIBES ALPESTRE GIGANTEUM Janczewski. Grossulariaceæ. Gooseberry.

"No. 1241. A wild gooseberry, growing from 6 to 15 feet tall, found in dry loess embankments at altitudes of 7,000 to more than 9,000 feet. Remarkably spiny; berries medium large, of elongated shape and persisting throughout the greater part of the winter. These gooseberry fruits are preserved by the American missionaries at Kiucheng, and they supply a very delicious tart compote. Of value apparently as a fruiting shrub and as a hedge plant for the cold semiarid sections of the United States."

For an illustration of this tall-growing bush as found in China, see Plate VI.

39917 to 39920.

From near Yangsa (near Titao), Kansu, China. Collected November 29 and 30, 1914.

39917. SIBIRAEA LAEVIGATA (L.) Maxim. Rosaceæ.
(*Spiraea laevigata* L.)

"No. 1243. A shrub growing from 4 to 8 feet tall, found on somewhat moist ground, and in semishady situations; flowers white, in racemes, appearing in June. Of value as an ornamental shrub for the colder sections of the United States. Collected at an altitude of more than 9,000 feet."

"A deciduous shrub of sturdy, bushy habit, 2 to 5 feet high, with thickish, rather sparse, perfectly smooth, brown branchlets. Leaves entire, narrowly obovate; 2 to 4½ inches long, one-half to seven-eighths inch wide; stalkless, tapering at the base, the apex with a short, abrupt point; glaucous green and quite smooth. Flowers white, produced from April to early June in terminal spreading compound panicles 3 to 5 inches high. Native of Siberia; introduced to

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

Britain in 1774. This species, whilst not particularly showy, is quite distinct from all other spiræas in its foliage, which in shape and color is more suggestive of a spurge (Euphorbia) than the genus to which it belongs. Shrubs 4 feet high are often as much as 7 feet through." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 357, under Spiraea laevigata.*)

39918. PRUNUS STIPULACEA Maxim. (?) Amygdalaceæ. Cherry.

"No. 1244. A wild cherry, bearing apparently very small fruits; found in somewhat moist and semishady situations. Grows into a tall shrub with many stems. Collected at an altitude of more than 9,000 feet. Of value possibly as an ornamental shrub, as a stock, and for breeding purposes."

39919. PHILADELPHUS sp. Hydrangeaceæ.

"No. 1245. A mock orange, found between scrub on a mountainside at an altitude of 9,500 feet. Apparently extraordinarily floriferous, to judge by the mass of empty seed capsules that were left. Of value possibly as an ornamental garden shrub for the cooler sections of the United States."

39920. RIBES sp. Grossulariaceæ. Currant.

"No. 1246. A currant of medium tall growth, found beneath tall scrub on a mountain slope at an altitude of 9,500 feet. Of value possibly for breeding purposes."

39921 to 39923.

From Lienhuashan (near Taochow), Kansu, China. Collected November 30, 1914.

39921 and 39922. SALIX sp. Salicaceæ. Willow.

39921. "No. 1247. A remarkable variety of willow, growing into a tall shrub or a bushy small tree and of which the tops for the length of about 1 foot are of a bright yellow color. When seen from above on a sunny winter day they make a strikingly cheerful impression. Of special value for parks when planted in masses or in groups in glens or low-lying places, so that they can be viewed from above. Collected at an altitude of 9,000 feet. Proposed name *Golden-Top* willow. Where these Golden-Top willows grow deep-blue spruces, snowy white birches, and red-wooded dogwoods are also found. This, together with the purplish crags as a background, make a most wonderfully harmonious winter landscape."

39922. "No. 1248. A variety of the *Golden-Top* willow, but with the young twigs of a rich reddish brown color. Of value for parks when planted in masses or in groups in glens or low-lying places, so that they can be viewed from above."

39923. MALUS sp. Malaceæ. Crab apple.

"No. 1249. A peculiar species of crab apple, bearing its small fruits in bunches. These fruits are of the size of peas, are bright red, and possess an agreeably sour flavor; they probably could be well utilized for preserves. The trees are of somewhat dwarf growth and seem remarkably hardy. They may be of value as stocks, as ornamental trees for northern regions, and for breeding purposes. Collected at an altitude of 9,000 feet."

39897 to 39924—Continued. (Quoted notes by Mr. F. N. Meyer.)

39924. POPULUS SIMONII Carrière. Salicaceæ. **Poplar.**

"(No. 1250. Near Chenyatan (near Titao), Kansu, China. December 1, 1914.) A variety of Chinese poplar, the trunk of which is remarkably warty, while the wood seems to be curled, as in bird's-eye maple. Collected on sandy land at an altitude of 8,000 feet. For specialists in figured woods."

39925. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. **Sword bean.**

From Changning, Kiangsu, via Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received February 23, 1915.

39926. ANGRAECUM FRAGRANS Thouars. Orchidaceæ.

From Curepipe, Mauritius. Presented by Mr. A. D. de Grandpré. Received February 17, 1915.

The interest attached to this little orchid is due to the persistent vanillalike odor of the leaves when dry, which has led to its use as a tea in Bourbon, in Mauritius, and even to some extent in France. According to a notice of an article on this plant by a M. Gobley, in the Gardeners' Chronicle (1850, p. 599), communicated to the Chemical Gazette, it is considered a digestive and even recommended in diseases of the respiratory organs. The popular name is variously spelled Fahame, Faham, Fahan, Fahon, Fahum, and Faam, of the origin of which I have no information. It is a native of both Bourbon and Mauritius. Leaves few, toward the top of the stem, 3 to 4 inches long by one-half to three-fourths inch broad. Flowers solitary, axillary, 2 inches in diameter across the sepals, pure white, fragrant. (Adapted from *Curtis's Botanical Magazine, pl. 7161.*)

39927. MANISURIS EXALTATA (L. f.) Kuntze. Poaceæ.
(*Rottboellia exaltata* L. f.)

From Poona, Bombay, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received February 20, 1915.

"Seeds from my herbarium specimens." (*Burns.*)

Introduced for the work of the Office of Forage-Crop Investigations.

39928 and 39929.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received February 23, 1915.

39928. CANANGIUM ODORATUM (Lam.) Baillon. Annonaceæ.
(*Cananga odorata* Hook. f. and Thoms.) **Ylang-ylang.**

For previous introductions and descriptions, see S. P. I. Nos. 20908, 35243, and 38652.

39929. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

"A very fine climbing new species from east tropical Africa, with very intense, large, fiery orange flowers." (*Buysman.*)

See S. P. I. No. 39626 for previous introduction and description.

39930 and 39931. CARICA spp. Papayaceæ.

From Buenos Aires, Argentina. Presented by Sr. Benito J. Carrasco, director general, Botanic Garden. Received February 23, 1915.

"Indigenous plants of this country." (*Carrasco.*)

39930. CARICA PAPAYA L.

39931. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook.

39932 to 39939.

From Burma, India. Collected by Mr. F. Kingdon Ward. Received February 20, 1915. Quoted notes by Mr. Ward, except as otherwise indicated.

39932. CAPSICUM ANNUUM L. Solanaceæ. **Red pepper.**

"Dwarf Capsicum grown by the Kachins, near Laza Mali Valley, northern Burma, latitude 26°; open cultivated areas, sandy soil, 1,000 to 2,000 feet; monsoon climate; ripe December, dry season."

39933. CHAETOCHLOA ITALICA (L.) Scribner. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"Millet from Kachin Hill tracts."

39934 and 39935. GOSSYPIUM spp. Malvaceæ. **Cotton.**

"Grown by Kachins in the mountains west of the Mali River, latitude 25° to 27° N., Upper Burma. Altitude 2,000 to 3,000 feet. Not irrigated. Monsoon climate. Soil friable clays or fine sands, all derived from sandstones."

39936 to 39939. ZEA MAYS L. Poaceæ. **Corn.**

"Grown by Naingvaws in the Valley of Nmaihka, Upper Burma, latitude 26° to 27° N. Altitude 5,000 to 6,000 feet. Soil derived from granite and other igneous rock. Climate, monsoon with frequent breaks of fine hot weather in summer. Not irrigated."

39936. Dark red. 39937. Variegated.

"Some of the seeds on the ear have an unmistakable waxy endosperm. This is the first time that this type of endosperm has been found outside the small region around Shanghai. The early Chinese accounts state that maize was introduced into China from the west, and this region of Upper Burma has always been under suspicion. That this type peculiar to China has reappeared from this region is very suggestive." (*G. N. Collins.*)

39938. Variegated. 39939. Dark yellow.

39940. CITRUS MEDICA SARCODACTYLIS (Nooten) Swingle. Rutaceæ. **Bushukan.**

From Yokohama, Japan. Scions purchased from the Yokohama Nursery Co. Received February 24, 1915.

"*Bushukan* differs from the common citron in having the segments of the fruit separated into fingerlike processes. The flowers are very fragrant and are used by the Chinese and Japanese for perfuming rooms and clothing. It is sometimes grown as a dwarf potted plant for ornament. It should be introduced into this country." (*Swingle. In Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 781.*)

39941 to 39945. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Tubers received February 19, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres.)

39941. "No. 6. *Papa;* white. From the station. Yielding 10,550 arrobas per caballería."

39942. "No. 200. *Mani;* white. From Trinidad, Santa Clara Province. Yielding 29,217 arrobas per caballería.

39943. "No. 182. *Santiago;* white. From El Caney, Oriente. Yielding 22,817 arrobas per caballería."

39944. "No. 198. *Papayon;* white. From Trinidad, Santa Clara Province. Yielding 6,792 arrobas per caballería."

39945. "No. 24. *Blanco.* From Luyano, Habana. Yielding 43,930 arrobas per caballería."

39946. PRUNUS MARITIMA Wangenheim. Amygdalaceæ.

From Wading River, Long Island, N. Y. Presented by Mr. E. S. Miller, through Mr. W. F. Wight. Received February 24, 1915.

Pomology No. 80370.

A deciduous shrub of low, compact habit, 4 to 8 feet high and more in diameter, with gray, downy young branchlets, becoming dark with age. Flowers white, one-half inch across, produced in May, usually in pairs or in threes at each bud on last year's shoots. Fruit red or purple, round or oblong, one-half to 1 inch in diameter. Native of the eastern United States, frequently inhabiting sandy or gravelly places near the coast. Its fruits are gathered for preserves, but they appear to vary in quality and sweetness. The flowers are borne profusely in this country [England], and the species is one of the most attractive of dwarf plums. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 242.*)

39947. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received February 24, 1915.

See S. P. I. No. 39723 for previous introduction and description.

39948 to 39951. NICOTIANA sp. Solanaceæ. **Tobacco.**

Collected by Dr. J. N. Rose, United States National Museum. Received February 18, 1915. Quoted notes by Dr. Rose.

39948. "Tobacco from Santa Clara, Peru. Collected July 3, 1914."

39949. "Tobacco seed from near San Bartelome, Peru. Collected July 20, 1914."

39950. "Like *Nicotiana glauca,* but leaves narrow. Collected August 12, 1914."

39951. "Collected September 3, 1914."

39952. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received February 26, 1915.

39953. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

From Santiago, Chile. Presented by Mr. W. A. Shelly. Received February 26, 1915.

39954. PERSEA INDICA (L.) Sprengel. Lauraceæ.

From Nice, France. Presented by Dr. A. Robertson-Proschowsky, Jardin d'Acclimatation. Received February 26, 1915.

See S. P. I. Nos. 14498 and 19371 for previous introductions.

39955. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From California. Presented by Mr. F. O. Popenoe, West India Gardens, Altadena. Received March 1, 1915.

"Grown at Camarillo, Cal." (*Popenoe.*)

39956. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Hankow, China. Purchased from L. C. Gillespie & Sons. Received March 2, 1915.

39957. FERONIELLA OBLATA Swingle. Rutaceæ.

From Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture. Received March 1, 1915.

39958 to 39963. ZEA MAYS L. Poaceæ. **Corn.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received March 1, 1915.

39958. "No. 1. Native white (*Moro*). The native white which has been improved by selection during the past three years is very promising and may prove to be valuable elsewhere." (*H. O. Jacobson.*)

39959. No. 2. Native red (*Encarnado*).

39960. No. 3. *Tapol.*

39961. No. 4. *Dali-an.*

39962. No. 5. Native yellow (*Laguna*).

39963. No. 6. *Tiniquit.*

39964. DELONIX REGIA (Boj.) Rafinesque. Cæsalpiniaceæ.
(*Poinciana regia* Hook.) **Royal poinciana.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received March 1, 1915.

"*Chivato.*"

"A rapid-growing tree with broad top and wide-spreading branches. Leaves gracefully bipinnate, 30 to 60 cm. long, with 10 to 20 pairs of pinnæ, each pinna with numerous small oval leaflets; flowers large, in large racemes, bright scarlet, the upper petal striped with yellow; calyx segments valvate; petals five, clawed, obovate; stamens 10, free, exserted; pod flat, straplike, 15 to 60 cm. long.

"This handsome ornamental tree is a native of Madagascar. It has become widely spread and is now found in all tropical countries. It yields a yellowish or reddish brown mucilaginous gum containing oxalate of lime." (*Safford, Useful Plants of Guam.*)

39965. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ. **Chestnut.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 3, 1915.

"A small tree, frequently less than 30 feet high, according to Sargent, but occasionally much larger; young shoots sometimes very downy, with the down persisting through the first winter, sometimes merely scaly. Leaves oblong lanceolate, 3 to 7 inches long, 1¼ to 2 inches wide, heart shaped or rounded at the base, pointed; the teeth small, with bristlelike points; lower surface covered with a close gray down; stalk one-half inch long, downy. Nuts like those of *C. sativa.*

"Native of Japan; introduced in 1905, if not before, to Kew, where young plants are thriving very well. This is a valuable food tree in Japan, and Sargent observes that he never saw chestnuts offered in such quantities for sale in Europe or America as there. Ordinarily the nuts are smaller than those of the European tree, but from selected trees or varieties they are as large as the best European varieties." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 307.*)

39966. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Garden. Received February 23, 1915.

"From Kumaon Gardens, Naini Tal. Called *Garhwal Kaghzi.* I do not think, however, that this seed is true to the name given. *Kaghzi* is the vernacular for paper, and refers to its alleged thin or paper shell. Walnuts are grown only on the hills; the season is from September to December. Walnuts are common in the bazar at about 3 to 4 annas (6 to 8 cents) per hundred." (*Hartless.*)

39967 to 39982.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received February 11, 1915. Quoted notes by Mr. Gee, except as otherwise indicated.

39967 to 39972. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.** (*Glycine hispida* Maxim.)

39967. "(No. 1. *Kua shu tou* (*Kwa zoh*). Melon-ripe bean.) This is so named because of its time of ripening. Seeds are sown about the first of May and cropped late in June when melons are ripe. Used only as a vegetable."

39968. "(No. 2. *Chia chia san tou* (*Kah kah sen*). Pod pod three bean.) Planted in the middle of May and reaped during September. Used as a vegetable and for manufacturing oil."

39969. "(No. 3. *Hung hsiang chih tou* (*Ong siang sze*). Red familiar bean.) These are 'Loving beans,' as the characters suggest. Planted in the middle of May and harvested about September. Used both as vegetables and in the manufacture of oil."

39970. "(No. 4. *Hei tou* (*Huk*). Black bean.) Owing to their color, these are called 'Black beans.' Planted in the first part of June and reaped in the middle of October. Used as a vegetable and in the manufacture of oil."

39971. "(No. 5. *Ku li ch'ing* (*Kwa lea ching*). Bone inside green.) Planted early in June and harvested in late October. Used only in making oil."

39967 to 39982—Continued. (Quoted notes by Mr. N. Gist Gee.)

39972. "(No. 6. *Shih tzŭ ho tou* (*Zee tee 'ah*). Persimmon-seed bean.) Planted in the first part of June and cropped in the middle of September. They are largely used as vegetables."

39973. PISUM SATIVUM L. Fabaceæ. **Pea.**

"(No. 7. *Hsiao han* (*Siao ea*). Small cold.) This bean is so named because of the time of planting. The Chinese characters mean 'early winter.' Planted in the middle of October and cropped in late May of the next year. Used as food when young."

39974 to 39977. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) **Soy bean.**

39974. "(No. 8. *Pa yüeh pai tou* (*Pah yuih*). Eighth-month white bean.) The combined meaning of its color and its time of ripening indicates the name. Planted in May and harvested in September, which is the eighth month of the Chinese calendar. Used to make oil. This and No. 9 [S. P. I. No. 39975] are the best two for oil manufacture."

39975. "(No. 9. *Shui pai tou* (*Gee buh*). Water-white bean.) Planted in late May and reaped in September. Used to manufacture oil; one of the best two for oil manufacture."

39976. "(No. 10. *Niu t'a pien* (*Nue duh pea*). Cow crush flat.) Its use and time of harvesting are the same as those of the *Gee buh* [S. P. I. No. 39975]. The beans are trodden out by cows; hence the name."

39977. "(No. 11. *Wu ch'iao tou* (*Oh tsah*). Sparrow's cackling (or magpie) bean.) Planted about the last part of June and cropped in mid-October. Used largely to make oil."

39978. GLEDITSIA SINENSIS Lam. Cæsalpiniaceæ. **Honey locust.**

G. sinensis is distinguished from *G. caspica* by never apparently having more than 14 leaflets to each simply pinnate leaf. It is found on the mountains near Peking as a tree 40 feet high. Cultivated on the Continent in Paris, Montpellier, Florence, etc., but not in England, according to Henry. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 596.*)

39979. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"(No. 13. *Shih tou* (*Ze*). Sowing (or fall) bean.) Planted in the fourth month of the Chinese colendar (May) and reaped in July. Used largely as a vegetable when young."

39980. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

"(No. 14. *Ch'ih tou* (*Tsih*). Red bean.) Planted in the first part of June and cropped in the middle of September. Used as food when mixed with rice."

39981. PHASEOLUS AUREUS Roxb. Fabaceæ. **Mung bean.**

"(No. 15. *Pai pien tou* (*Buh pee*). White flat bean.) Planted in the first part of June and cropped in late September. Used as a vegetable and to make cakes."

39982. SOJA MAX (L.) Piper. Fabaceæ. (*Glycine hispida* Maxim.) **Soy bean.**

"(No. 16. *Lü tou* (*Loh*). Green bean.) Planted in the early part of June and cropped early in September. Used the same as the *Ch'ih tou* [S. P. I. No. 39980]. Called 'green bean' because of its color, probably."

39983 to 39998.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 26, 1915. Collected in Japan by Mr. E. H. Wilson.

39983 to 39987. ABIES spp. Pinaceæ. **Fir.**

39983. ABIES MARIESII Masters. **Maries's fir.**

Wilson No. 7595.

"A tree 40 to 50, occasionally 80, feet high, of compact, pyramidal form; young shoots very densely covered with red-brown down, which persists several years; buds small, globose, completely encased in resin. Leaves one-third to 1 inch long, one-twelfth inch wide; dark shining green and deeply grooved above; glaucous beneath, with two broad bands of stomata; apex rounded and notched. The lower ranks spread horizontally, whilst the upper shorter ones point forward and completely hide the shoot. Cones 3 to 4 inches long, about 2 inches wide, rounded at the top, egg shaped, purple when young; bracts hidden.

"Discovered on Mount Hakkoda, in Japan, by Charles Maries in 1878, and introduced by him at the same time. It is one of the rarest of silver firs, and scarcely a good tree exists in the country. I saw a small healthy specimen at Scone Palace in 1906. Two years later, in Mr. Hesse's nursery at Weener, in Hanover, I saw a healthy batch he had raised from seeds. I do not know that it has borne cones in this country. (The fir figured in the Botanical Magazine, t. 8098, is *A. webbiana*.) Maries's fir is best distinguished by the thick red-brown covering of down on the twigs." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 123.*)

39984. ABIES SACHALINENSIS (Schmidt) Masters. **Fir.**

Wilson No. 7613.

"A tree 130 feet high, native of northern Japan, Sakhalin, etc., but so liable to injury by late spring frost in this country as to be of no value. It has the *nordmanniana* arrangement of leaf, but in the forward-pointing leaves, which are three-fourths to 1½ inches long and very white beneath, it resembles *A. veitchii;* buds white, resinous. Cones 2½ to 3½ inches long. Introduced in 1878, by Maries, for Messrs. Veitch. I saw a tree about 16 feet high at Murthly Castle, near Perth, in 1906, but even there not in the best of health." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 117.*)

39985. ABIES SACHALINENSIS NEMORENSIS Mayr.

Wilson No. 7869.

See S. P. I. No. 39860 for previous introduction and description.

39986. ABIES UMBELLATA Mayr.

Wilson No. 7707.

"*Abies umbellata* is quite closely allied to, and may be merely a form of, *A. brachyphylla*, but the leaves are more distinctly separated into two opposed sets, and the V-shaped opening left by the uppermost leaves is much wider; they are also longer (up to 1½ inches), the stomatic bands beneath are narrower and duller white, the apex is much more tapered, and the double points made by the notch are sharp, almost spiny. An interesting distinction is pointed out by Henry in the corrugation of the branchlets; in *A. umbellata* this is less apparent in the second and third years; in *A. brachyphylla* it is more pronounced. A cut branchlet bears a considerable re-

39983 to 39998—Continued.

semblance to that of *A. firma*, but the downy unroughened surface of the shoot of the latter at once distinguishes it. *A. umbellata* appears to have all the beauty and hardiness of *A. brachyphylla*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 119.*)

39987. ABIES VEITCHII OLIVACEA Shirasawa. Fir.

Wilson No. 7525.

The species is described by Bean (*Trees and Shrubs Hardy in the British Isles, vol. 1, p. 127*), as "a tree 50 to 70 feet high; young shoots brown, furnished with a more or less scattered, minute down; buds globose, very resinous, purplish. Leaves one-half to 1⅛ inches long, one-sixteenth inch wide, the base tapered, the apex cut off straight and notched; dark glossy green and grooved above, vividly white with stomatic lines beneath. All the leaves point forward, and most of them curve more or less upward; a few occur underneath the shoot, but most of them are above it or at the sides. On lateral shoots growing erect or nearly erect the leaves are arranged about equally around the twig. Cones cylindrical, 2 to 2½ inches long, about 1 inch wide; blue-purple at first.

"Discovered on Fujiyama, Japan, by John Gould Veitch in 1860. Introduced by Maries in 1879. Among silver firs this species is very distinct, on account of the narrow truncate leaves pointed forward and curling upward and intensely blue-white beneath. The best tree I have ever seen is at Murthly, which in 1906 was just over 30 feet high; it is a particularly handsome conifer in a small state, but appears inclined to develop a somewhat lanky habit with age."

"*Aoshirabe* (Japanese). This tree differs from the species chiefly in the characters of the cones, which are cylindrical, somewhat obtusely pointed, 7 cm. (2.8 inches) long, and 25 mm. (1 inch) in diameter, olive-yellow, while those of *A. veitchii* show a deep blue-violet color." (*H. Shirasawa, Mitteilungen der Deutschen Dendrologischen Gesellschaft, p. 256, 1914.*)

39988. ACER CAPILLIPES Maxim. Aceraceæ. Maple.

Wilson No. 7747.

"A deciduous tree, sometimes 30 to 35 feet high, the branchlets erect when young and marked with whitish stripes running lengthwise; branchlets smooth. Leaves reddish when young, three lobed; 3 to 5 inches long, about three-fourths inch wide; smooth, doubly toothed, the terminal lobes triangular and larger than the side ones; veins and stalks usually red. Flowers greenish white, in drooping slender racemes 2½ to 4 inches long. Fruits smooth, numerous, in drooping racemes; key one-half to three-fourths inch long; wings rounded at the end, one-fifth inch wide, spreading at an angle of 120° to almost horizontal.

"Native of Japan, introduced to cultivation by Prof. Sargent, who found fruiting trees in Japan in October, 1892, and sent young trees to Kew a year or two later. It has proved hardy. It is one of the handsome group with striated branches, including *A. pennsylvanicum* and *A. rufinerve*, to both of which it is closely allied and bears much resemblance in shape of leaf, but is readily distinguished by the absence of down on leaf, young wood, and flower stem." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 136 and 137.*)

39983 to 39998—Continued.

39989 to 39991. BETULA spp. Betulaceæ. **Birch.**

39989. BETULA SCHMIDTII Regel.

Wilson No. 7687, from the Province of Shimotsuke, Hondo, around Lake Chuzenji, at an altitude of 1,200 to 1,600 meters. October 20, 1914.

"A tree 30 to 35 meters tall, girth 2.1 to 3 meters. This is a well-marked species characterized by the narrow but stiff erect catkins and by the fine denticulations of the short-petioled leaves. The bracts are rather short, with obtuse or acute lobes, the middle one being twice longer than the erect lateral lobes. This remarkable birch is rare in Japan, and I saw it only on the wooded shores of Lake Chuzenji and in the ascent there from Nikko. It is a large tree, with thick branches and black bark which falls off in thick, rather small plates of irregular shape." (*Plantae Wilsonianae, vol. 2, p. 475–476.*)

39990. BETULA JAPONICA KAMTSCHATICA (Regel) Winkler.

Wilson No. 7669, from the Province of Shimotsuke, Hondo, around Yumoto, on Senjogahara, October 19, 1914.

"Slender tree, 8 to 20 meters tall, girth 0.3 to 0.9 meter, bark pure white, common, fruit pendulous." (*Plantae Wilsonianae, vol. 2, p. 487.*)

39991. BETULA GROSSA Sieb. and Zucc.

Wilson No. 7680, from the Province of Shimotsuke, Hondo, around Lake Chuzenji, October 21, 1914.

"*Yoguro-minebari.* A tree 20 to 25 meters tall, girth 2.1 to 3 meters, fruit erect." (*Plantae Wilsonianae, vol. 2, p. 477.*)

39992. JUNIPERUS LITORALIS Maxim. Pinaceæ. **Juniper.**

Wilson No. 7740.

Distribution.—A prostrate shrub found along the sandy shores of the islands of Japan.

39993. ACANTHOPANAX SCIADOPHYLLOIDES Franch. and Savat. Araliaceæ.

Wilson No. 7649.

A tall, glabrous shrub with alternate branches. Leaves alternate, long petiolate (12 to 25 cm.), digitately five parted; the upper often three parted or occasionally simple. Leaflets long petiolate (1 to 3 cm.), ovate from a rounded or slightly attenuate base, slightly acuminate at the apex, sharply denticulate, pale green above, somewhat glaucous beneath. Flowers white, arranged in more or less dense panicles. Japan. (Adapted from *Franchet et Savatier, Enumeratio Plantarum Japonicarum, v. 2, p. 378. 1879.*)

39994 and 39995. LARIX spp. Pinaceæ. **Larch.**

39994. LARIX KURILENSIS Mayr.

Wilson No. 7328.

See S. P. I. No. 35171 for previous introduction and description.

39995. LARIX DAHURICA PRINCIPISRUPPRECHTII (Mayr) Rehd. and Wilson.

The Korean larch.

TRUNK OF POTANIN'S PEACH (AMYGDALUS PERSICA POTANINI, S. P. I. No. 40007).

A wild peach of the type of *A. davidiana*, but seldom growing so large; maximum 30 feet. Occurs at altitudes of 4,000 to 7,000 feet in side valleys, especially in well-sheltered warm mountain pockets. Its fruits are not edible, but as a stock for stone fruits it may prove more drought resistant even than *davidiana*. Its behavior on a hillside location is shown in the illustration. Photographed by Frank N. Meyer, October 29, 1914 (P12108FS).

A HARDY WILD PEAR TREE IN KANSU, CHINA (PYRUS SP., S. P. I. No. 40019).

This remarkable wild pear, according to Rehder, stands close to if it is not identical with *Pyrus ussuriensis*, which has aroused so much interest because of its resistance to pear blight. It occurs in the mountains at altitudes of 8,000 feet in company with the Siberian crab, *Populus tremula*, and *Picea obovata*, all northern plants. Though the fruits from the wild tree are hard, acrid, and inedible, the species appears to have given rise to cultivated forms of this pear, which, unlike the true Chinese pear (*Pyrus sinensis*), are melting in character and not hard and gritty. As a stock or for breeding purposes such a vigorous wild pear can hardly fail to be of value. **Photographed by Frank N. Meyer near Tchenyatau, Kansu, December 1, 1914 (P12129FS).**

39983 to 39998—Continued.

"The typical form of *L. principis rupprechtii* as represented by the specimens from Wutaishan (collected by Purdom and Meyer) looks quite distinct from typical *L. dahurica*, but the specimens from Weichang, together with others from Manchuria, Amurland, and Korea, form a series which gradually merge into typical *L. dahurica*. With *L. sibirica* Ledebour, with which it has been compared, it agrees only in the size of its cones, but differs in their perfectly glabrous, more spreading, and thinner scales not incurved on the margin, truncate, or (particularly in the Weichang specimens) even emarginate at the apex, and in the more conspicuous bracts which are often, particularly in the lower part of the cone, more than half as long as the scales; in all these characters *L. principis rupprechtii* agrees with *L. dahurica*, and it seems therefore best to consider it a variety of this species, distinguished by the more numerous scales. Purdom and also Meyer speak of this larch as forming forests on the northern slopes of Wutaishan and in its neighborhood where, according to Meyer, the snow does not melt until well into May. In the Weichang region Purdom remarks that the tree is now becoming very scarce." (*Rehder and Wilson, Plantae Wilsonianae, vol. 2, p. 21, 1914.*)

39996. PICEA KOYAMAI Shirasawa. Pinaceæ. **Spruce.**

Wilson No. 7528.

A small, cone-shaped Japanese spruce, up to 10 m. (32½ feet) high; the trunk reaches a diameter of 25 cm. (10 inches). The young trees present an appearance similar to those of *P. excelsa*. Young twigs reddish brown, smooth; buds cone shaped, short; scales brown, covered with resin; needles short, thick, obtuse, four sided, standing thickly and obliquely on the twigs; straight or often somewhat bowed, 7 to 13 mm. (one-fourth to one-half inch) long, seeming blue-white from a distance. Cones elliptic oval, obtuse, brownish yellow-green, 3.5 to 6 cm. (1.4 to 2.4 inches) long, 2.5 cm. (1 inch) broad. (Adapted from *H. Shirasawa, Mitteilungen der Deutschen Dendrologischen Gesellschaft, p. 254, 1914.*)

39997. TAXUS CUSPIDATA Sieb. and Zucc. Taxaceæ. **Yew.**

Wilson No. 7778.

For previous introduction and description, see S. P. I. No. 39861.

39998. VIBURNUM FURCATUM Blume. Caprifoliaceæ.

Wilson No. 7624.

"A native of Japan and China. This also has the showy sterile marginal flowers, but its stems are more uniformly erect. It differs also in the shorter stamens, which are only half the length of the corolla, and in the shape of the furrow in the seed. It succeeds in gardens no better than *V. alnifolium*, although there was a healthy plant at Abbotsbury, near Weymouth, a few years ago. It is a native of northern Japan at low levels and of the mountainous parts of the south. The foliage turns brilliant scarlet to reddish purple in autumn. It is a bush 12 or more feet high in a wild state." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 642.*)

Distribution.—The Provinces of Hupeh and Szechwan in China and on Sakhalin Island and in Japan.

39999. QUERCUS sp. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received March 5, 1915.

Selected from a lot of *Quercus insignis*.

40000 to 40039.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 2, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

40000 to 40006. AMYGDALUS spp. Amygdalaceæ. **Peach.**

40000. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"(No. 2138a. July to November, 1914.) Cultivated and escaped peaches, collected along the roadsides in the Chinese Provinces of Honan, Shansi, Shensi, and Kansu at various altitudes. To be sown to obtain new types, possibly."

40001 to 40006. AMYGDALUS spp.

40001. "(No. 2139a. Sianfu, Shensi, China. August 30, 1914.) Wild peaches having larger fruits than the ordinary wild ones, said to come from near Tzewu, to the south of Sianfu, but some also probably collected from trees in gardens which were raised from wild seeds. When seen wild this peach generally assumes a low bush form of spreading habit; when planted in gardens and attended to, it grows into a small tree, reaching a height of 12 to 20 feet, with a smooth trunk of dark mahogany-brown color. The leaves are always much smaller and more slender than in cultivated varieties, while their color is much darker green. They seem to be somewhat less subject to various diseases than the cultivated sorts, and they are most prolific bearers, although the fruit is of very little value, on account of its smallness and lack of flavor. In gardens around Sianfu this wild peach is utilized as a stock for improved varieties. It is also grown as an ornamental; said to be literally covered in spring with multitudes of shell-pink flowers. See also No. 2123a [S. P. I. No. 39428]."

40002. "(No. 2140a. Tsing Range, Shensi, China. September, 1914.) Wild peaches, occurring in the foothills of the higher mountains at altitudes of 2,000 to 5,000 feet, generally found at the edges of loess cliffs and on rocky slopes. There is a great deal of variation to be observed as regards size and shape of leaves, density of foliage, and general habits."

40003. "(No. 2141a. Near Paichiatien, near Fenghsien, Shensi, China. September 17, 1914.) Wild peaches found on a mountain side, at an altitude of 4,000 feet; these small trees and bushes had borne such a heavy crop that the ground beneath them was covered with a layer, a few inches thick, of the small, yellowish, hairy fruits. The local inhabitants didn't consider them worth collecting even, and they were rotting and drying up."

40004. "(No. 2142a. Kagoba (south of Hsiku), Kansu, China. October 3, 1914.) Wild peaches occurring as tall shrubs in loess cliffs at the Tibetan frontier at altitudes of 6,000 to 8,000

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

feet. Save for some children who eat these wild peaches, they are otherwise considered worthless wild fruit. Local name *Yeh t'ao*, meaning 'wild peach,' and *Mao t'oa*, meaning 'hairy peach.'"

40005. "(No. 2143a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) Wild peaches found on stony mountain slopes in a wild, very sparsely populated country. No fruit trees whatsoever are cultivated by the local settlers in the mountains, and the way some of these peach bushes grow excluded them from ever having been brought there by any man or even any quadruped; only birds might have transported them."

40006. "(No. 2144a. Tchutsaitze (near Hsiku), Kansu, China. November 2, 1914.) Wild-growing peach of tall, bushy growth, having the looks and habits of a type midway between the wild peach and Potanin's peach. Collected at an altitude of 4,500 feet, at the foot of a dry mountain."

40007 to 40009. AMYGDALUS PERSICA POTANINI (Batal.) Ricker. Amygdalaceæ. (*Prunus persica potanini* Batal.)

40007. "(No. 2145a. Tchutsaitze (near Hsiku), Kansu, China, October 29, 1914.) Potanin's peach, collected at an altitude of 4,300 feet. Scions sent under No. 1223 [S. P. I. No. 39899], which see for further remarks."

For an illustration of the trunk of this peach tree as found growing in China, see Plate VII.

40008. "(No. 2146a. Near Tchutsaitze (near Hsiku), Kansu, China, November 3, 1914.) A variety of Potanin's peach having very much larger stones than the ordinary variety. Collected at an altitude of 6,000 feet. Of value especially as a stock for stone fruits; also recommended as an ornamental spring-flowering tree, especially for the drier parts of the United States."

40009. "(No. 2147a. Near Paoji (near Hsiku), Kansu, China. November 9, 1914.) Potanin's peach, collected from mountain sides, where it is much cut for its fine straight shoots, which serve for pipestems and for whip butts. Altitude, 7,000 feet."

40010 and 40011. AMYGDALUS TANGUTICA (Bat.) Korsh. Amygdalaceæ. (*Prunus tangutica* Koehne.)

40010. "(No. 2148a. Lantsai (near Hsiku), Kansu, China. October 29, 1914.) The Tangutian almond, collected at an altitude of 4,200 feet. Scions sent under No. 1222 [S. P. I. No. 39898], which see for further notes."

40011. "(No. 2149a. Near Kiucheng (New Taochow), Kansu, China, November 27, 1914.) The Tangutian almond, collected along the banks of the Tao River, at an altitude of 9,450 feet. It was here that the Russian traveler G. N. Potanin obtained some of his material in 1885. For further remarks, see No. 1222 [S. P. I. No. 39898]."

40012 and 40013. PRUNUS ARMENIACA L. Amygdalaceæ. Apricot.

40012. "(No. 2150a. Near Lantsai (near Hsiku), Kansu, China. November 3, 1914.) Wild apricots, occurring very commonly in

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

the mountains at altitudes of 5,000 to 9,000 feet. The natives collect the stones, crack them, take the kernels out, and eat them, after having boiled them. They still taste bitter, however. Of use possibly in extending apricot culture farther north; also as stocks for stone fruits in semiarid regions and as hardy spring-flowering park trees for the cooler parts of the United States."

40013. "(No. 2151a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) Wild apricots, coming from a different district; otherwise the same remarks apply to them as to the preceding number."

40014 and 40015. PRUNUS spp. Amygdalaceæ. **Plum.**

40014. "(No. 2152a. Near Kwanyintang (between Paochi and Fenghsien), Shensi, China. September 15, 1914.) A wild plum, found on somewhat stony mountain slopes at altitudes between 4,000 and 5,000 feet. Grows into a tall bush, densely branched and often spiny on the young shoots. Fruits the size of a large marble, of yellowish green color, flavor very spicy, although sour near the skin and the stone. Of value possibly to supply compotes and for breeding experiments."

40015. "(No. 2153a. Kagoba (south of Hsiku), Kansu, China. October 31, 1914.) A wild plum, growing into a tall bush or even a small tree, found on sloping stretches of loess land at the foot of mountains near the Tibetan frontier at altitudes of 6,000 to 8,000 feet. Of value possibly, like the preceding number."

40016. JUGLANS REGIA L. Juglandaceæ. **Walnut.**

"(No. 2145a. Hsiku, Kansu, China. October 26, 1914.) Wild walnuts, growing on sheltered mountain sides and in narrow valleys at altitudes of 5,000 to 8,000 feet. There is some variation in the size and quality of nuts from various trees, but in general these wild walnuts are small, hard shelled, and not sweet. The trees may, however, be much hardier than the Persian strain of walnuts, and possibly they could be utilized in extending walnut culture farther north."

40017 and 40018. CEPHALOTAXUS DRUPACEA SINENSIS Rehd. and Wilson. Taxaceæ.

40017. "(No. 2155a. Near Kwanyintang (between Paoki and Fenghsien), Shensi, China. September 15, 1914.) An evergreen conifer, growing into a tall shrub or rarely into a gnarled small tree. Resembles in general habits *Cephalotaxus fortunei*, but of denser, less open growth, especially beautiful when young, or two or three years after it has been cut down to the ground; for this plant throws up sets of new shoots more compact in growth than the original stems. It withstands a great amount of shade, and thrives even among bowlders and stony débris. Of value as an ornamental evergreen, especially for shady places, for those parts of the United States where the winters are not too severe. Collected at an altitude of 4,000 feet."

40018. "(No. 2156a. Near Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) The same as the preceding number [40017], but coming from a different locality; collected at 5,000 feet altitude. Locally this shrub is called *Shui pei shu*, meaning 'water conifer.' Its seeds are collected by the people and eaten

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

boiled, apparently to remove a poisonous principle. They are rich in oil, but taste bitterish even after having been boiled. Of value like the preceding number."

40019. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

"(No. 2157a. Near Tchenyatau (near Titao), Kansu, China. December 1, 1914.) A species of wild pear, growing to be a large tree, with a wide-spreading, dense head of branches. Bark of dark color and in the main trunk even blackish and deeply furrowed in old specimens. Young branches often ferociously spiny and especially so in suckers. Leaves small and with much shorter peduncles than in *Pyrus chinensis*. Fruits globose, flattened. Calyx persistent, peduncle generally short; much variation exists as regards size, but the fruits of this species of pear are generally small; the flesh is also acrid and often quite hard, though some of the larger ones are edible after having been frozen. This pear is not found in the warm valleys, but it thrives best at altitudes of about 8,000 feet, in company with such hardy trees and shrubs as *Picea obovata*, *Populus tremula*, *Malus baccata*, *Hippophaë rhamnoides*, *Syringa amurensis*, *Rhamnus dahurica*, *Sorbaria sorbifolia*, and others. This pear has apparently given rise to some locally cultivated forms bearing small, sour fruits, which are juicy, however, and melting, and not hard and gritty, like the poorer strains of *P. chinensis*. Of undoubted value as a stock for pears in cold sections and as a factor in breeding experiments in trying to extend successful pear culture farther northward."

For an illustration of this hardy pear tree as found growing in China, see Plate VIII.

40020. MALUS sp. Malaceæ. Crab apple.

"(No. 2158a. Lienhuashan (near Taochow), Kansu, China. November 30, 1914.) A peculiar species of crab apple of which scions were sent under No. 1249 [S. P. I. No. 39923], which see for further information."

40021. SORBUS sp. Malaceæ. Rowan.

"(No. 2159a. Lienhwashan (near Taochow), Kansu, China. November 30, 1914.) A species of rowan of tall, shrubby growth; found in somewhat shady places at altitudes of 8,000 to 10,000 feet. Leaves small and pinnate, berries of pale yellow color, in some species apparently white. Possessing a good flavor, though somewhat bitter; of use, however, for preserves. This rowan is of value possibly as a tree for the home garden, especially for the cooler sections of the United States."

40022. RIBES ALPESTRE GIGANTEUM Janczewski. Grossulariaceæ. Gooseberry.

"(No. 2160a. Near Yangsa (near Titao), Kansu, China. November 29, 1914.) A very spiny wild gooseberry, with quite elongated fruits. Collected at an altitude of more than 9,000 feet. For further information, see No. 1241 [S. P. I. No. 39916]."

For an illustration of this tall-growing bush as found in China, see Plate VI.

40023. PRINSEPIA UNIFLORA Batalin. Amygdalaceæ.

"(No. 2161a. Near Sanszemiau (near Taochow), Kansu, China. December 1, 1914.) A fruit-bearing, spiny shrub, suggested as a possible

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

new fruiting bush for the semiarid sections of the United States, collected at an altitude of 6,500 feet. See also remarks under No. 2127a [S. P. I. No. 39432]."

40024. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"(No. 2162a. Hsiku, Kansu, China. October 20, 1914.) A variety of *Ghoorma* persimmon, with fruits much larger than the ordinary sort; shape also different, being flattened globose; color yellow, changing later on into blackish. Taste much like a *kaki*, making one think that *D. lotus* possibly could be developed into a promising fruit-bearing tree adapted especially for mild-wintered semiarid regions."

40025. SCHIZANDRA SPHENANTHERA Rehd. and Wilson. Magnoliaceæ.

"(No. 2163a. Paoki, Shensi, China. September 12, 1914.) A perennial woody vine of slender growth, found between tall scrub in shady places; foliage not unlike that of *Actinidia kolomikta*, but somewhat thinner and with red petioles. The carmine-red berries are borne in small spikes on fleshy stalks, and they hang down gracefully; these berries are the size of currants; they possess a subacid, spicy, aromatic taste, somewhat too pronounced to make it acceptable right away to most Caucasian people. The Chinese eat them much and claim they purify the blood and dislodge waste matter from the body. By selection better varieties could be obtained, no doubt, which might prove to be quite acceptable to the western palate. This vine deserves to be experimented with for the following purposes: As an ornamental cover vine for shady places, as a possible new fruiting vine to be grown on trellises on northern exposures, and as a medicinal plant having apparently some value as a blood cleanser. Chinese name *Wu wei tzŭ*, meaning 'fruit of five tastes.'"

40026. VITIS sp. Vitaceæ. **Grape.**

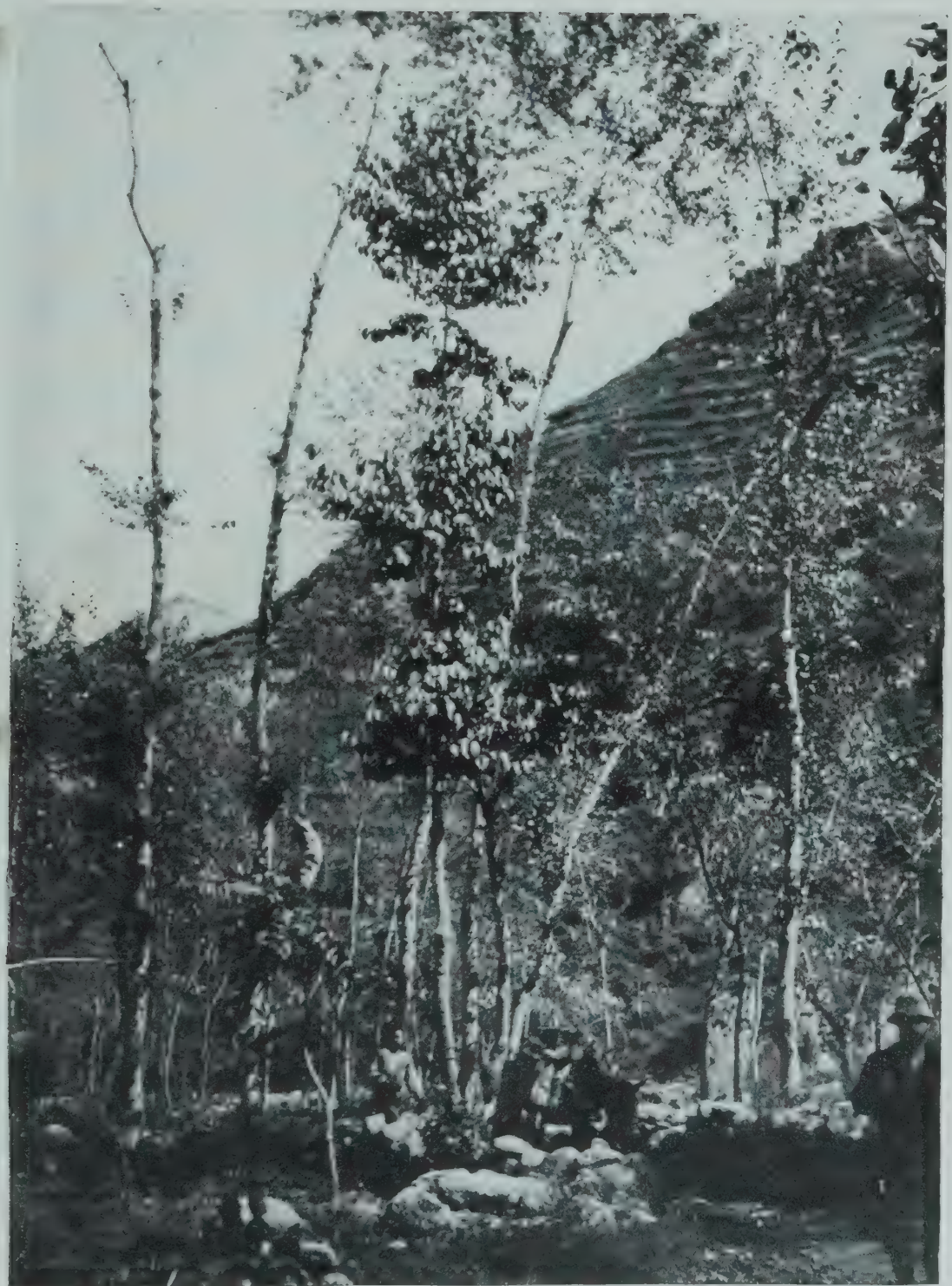
"(No. 2164a. Near Kwanyintang (between Paoki and Fenghsien), Shensi, China. September 15, 1914.) Wild grapes, overrunning tall scrub and trees on mountain sides at altitudes between 3,000 and 5,000 feet. The small bunches of blackish blue berries are collected by the people and eaten, but no attempts seem to be made to domesticate these wild grapes. Of value possibly in breeding experiments, as stocks, and as ornamental cover vines for pergolas, etc. There may be several distinct forms among these seeds."

40027. DIPELTA YUNNANENSIS Franchet. Caprifoliaceæ.

"(No. 2165a. Near Paoji (near Hsiku), Kansu, China. November 6, 1914.) A shrub of the appearance of a Lonicera when seen in winter, but bearing triangular winged fruits. Cuttings sent under No. 1229 [S. P. I. No. 39905], which see for further information."

40028. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. **Tuchung.**

"(No. 2166a. Huihsien, Kansu, China. September 28, 1914.) A Chinese caoutchouc tree, found wild on densely forested mountain slopes in southwestern Shensi and southeastern Kansu; also much cultivated in gardens and here and there planted along roadsides. This tree has the peculiar property of exhibiting rubberlike threads of shining whitish color whenever pieces of bark or leaf are snapped across, but it shows this peculiarity strongest of all in its winged fruits, which fact is often shown by the Chinese to those who have never seen it before.



A HARDY GUM-PRODUCING TREE IN KANSU, CHINA (EUCOMMIA ULMOIDES, S. P. I. No. 40028).

The Tu chung or Shih mien shu tree of Kansu is planted with poplars along roadsides, and its long slender stems are used for house building. It grows to 80 feet in height, preferring shelter from other trees. It has proved hardy at Washington. Its bark and leaves contain a peculiar gum, which as yet has been imperfectly investigated by chemists, but which among the Chinese is highly prized. The ground-up bark is given as a heart stimulant, and is said to especially benefit confirmed opium smokers. Photographed by Frank N. Meyer near Fuorryi, Kansu, October 7, 1914 (P12164FS).

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

They call this tree on this account *Shih mien shu*, meaning 'stone cotton tree,' reference being made apparently to the resemblance of this caoutchouc or rubber to asbestos. The bark of this Eucommia is a valuable drug, used as a heart stimulant and said to benefit especially those whose hearts have become affected by overindulgence in opium. The bark is called *Tu chung*, meaning 'heart's ease,' and the tree also passes under that name, although in Shensi and Kansu the name *Shih mien shu* is the one commonly used. It seems that the bark is mostly taken from trees that are from 7 to 12 years old. Here and there the Chinese have taken advantage of the rapid growth the Eucommia makes when young, and they have planted them along roadsides, together with poplars. The long, slender, and straight stems are used for house-building purposes. This tree reaches a height of 80 feet, but it seems to grow best when sheltered by other trees. Of value as a quick-growing ornamental tree for parks in those sections of the United States where the winters are not too severe. It also might be planted in plantations, after careful inquiries have been made as to the amount of bark China could take annually, and its bark exported to China. Obtained from the garden of the Belgian Roman Catholic missionaries in Huihsien."

"A deciduous tree, not yet found by Europeans in a wild state, but from 20 to 30 feet high, as seen cultivated by the Chinese. It probably reaches a large size. Leaves alternate, ovate to oval, long and slender pointed, toothed, 2 to 8 inches long, slightly hairy on both surfaces when young, becoming smooth above. Flowers unisexual, the sexes on separate trees; they are inconspicuous, the males consisting of brown stamens only; female ones not seen by me. Fruit flat and winged, 1-seeded, rather like an enlarged fruit of wych-elm, oval oblong, 1½ inches long, tapering at the base into a short stalk, apex notched.

"Introduced to France from China about 1896, and a few years later to Kew, where several plants raised from the original plant (a male) are 15 to 20 feet high and have several times flowered. It was first discovered in China by Henry as a cultivated tree, 20 to 30 feet high, but as its bark is and has been for 2,000 years highly valued by the Chinese for its real or supposed tonic and other medicinal virtues, it is never allowed to reach its full size, but is cut down and stripped of its bark. To Europeans the most interesting attribute of this tree is its containing rubber. What its commercial value may be is doubtful; the rubber is apparently of inferior quality, but the tree is of peculiar interest, as the only one hardy in our climate that is known to produce this substance. If a leaf be gently torn in two, strings of rubber are visible. At Kew, grown in good loam, it has proved absolutely hardy and a vigorous grower; it can be propagated by cuttings made of half-ripened wood put in gentle heat. Wilson introduced seeds to the Coombe Wood nursery, from which, no doubt, trees of both sexes have been raised. Some authors place it in the witch-hazel family." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 534–535.*)

For an illustration of these gum-producing trees as found growing in China, see Plate IX.

40029. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ. Palm.

"(No. 2167a. Huihsien, Kansu, China. September 28, 1914.) The Chinese fan or coir palm, cultivated in gardens in southern Shensi and southern Kansu as an ornamental tree, reaching a height of 30 to 40

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

feet. Withstands successfully winter temperatures, unprotected, of −12° C. (+11° F.), as happened in Huihsien on November 1, 1895, when all the other palms around there died. Of value as a fine ornamental garden and park tree for all parts of the United States where the mercury does not go much below 10° F. Chinese name *Tsung shu*, meaning 'coir palm tree.' Obtained like the preceding number, 2166a [S. P. I. No. 40028]."

40030. ABELMOSCHUS MANIHOT (L.) Medic. Malvaceæ. **Hibiscus.**
(*Hibiscus manihot* L.)

"(No. 2168a. Near Tsaichiapu, Shensi, China. September 9, 1914.) A species of Hibiscus, with many large flowers of clear yellow color; cultivated here and there on fertile flats along the Wei River as a vegetable. The petioles of the flowers, just before they expand, are picked and also the young tops; these are dried in the wind or in the sun and when dry, ground into a powder, which is sprinkled over flour noodles to make them more gelatinous, or it is added to soups and sauces to make them mucilaginous. The taste of this powder is slightly subacid, and not unpleasantly so. Possibly a good jelly could be made from it. Chinese name *Chih ts'ao*."

40031. ASPARAGUS TRICHOPHYLLUS FLEXUOSUS Trautv. Convallariaceæ.

"(No. 2169a. Near Yangsa (near Titao), Kansu, China. November 30, 1914.) An asparagus of trailing habits and having spiny bracts; found wild among low scrub in a loess bank. Apparently rare. Of value possibly in breeding experiments and as a trailing garden perennial."

40032. ALANGIUM CHINENSE (Lour.) Rehder. Cornaceæ.
(*Marlea begonifolia* Roxb.)

"(No. 2170a. Near Yuyinchen (between Liangtang and Huihsien), Kansu, China. September 26, 1914.) A shrub or small tree, belonging to the Cornaceæ, bearing leaves of many forms, some being very large and of lop-sided, elliptical shape, while others have five points and are small, resembling leaves of *Liquidambar styraciflua*. Found in somewhat damp places at the foot of embankments or along streams. Of value as a striking looking garden and park shrub for mild-wintered regions."

40033. OSTEOMELES SCHWERINAE Schneider. Malaceæ.

"(No. 2171a. Kwatsa (on the Hsiku River), Kansu, China. November 10, 1914.) A very dense-growing shrub, from 2 to 5 feet tall, having small, dark-green, finely pinnate leaves. Found on dry stony wastes and in rock cliffs. Bears small bluish black berries in the late fall of the year and is said to bloom profusely in early summer with conspicuous white flowers. Of value as a shrub for rockeries and as a lining bush along pathways running irregularly."

"An evergreen shrub, growing probably 6 to 8 feet high in the open, considerably more against a wall; the long, slender, flexible branchlets covered with short gray hairs. Leaves pinnate, 2 to 4 inches long, composed of 8½ to 15½ pairs of leaflets, covered, more especially beneath, with gray down; main stalk hairy, channeled above. Leaflets oblong-oval or obovate, with a short abrupt point, stalkless, one-quarter to five-eighths inch long, about one-third as wide. Flowers white, one-half to two-thirds inch diameter, produced in June in branching corymbs 1½ to 3 inches across, terminating lateral twigs; calyx lobes ovate-lanceo-

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

late, hairy outside, smooth within. Fruit egg shaped, one-fourth to three-eighths inch long, at first dark red, blue-black when ripe, smooth, crowned by the persistent calyx; 5-seeded.

"Native of Yunnan and other parts of China; originally raised in the Jardin des Plantes at Paris from seed which had been sent from Yunnan by the Abbé Delavay in 1888; introduced to Kew in 1892. Forms nearly allied to this Chinese plant occur throughout the southeast Pacific region as far as the Sandwich Islands and New Zealand. The whole were at first included under *O. anthyllidifolia* Lindley, but the west Chinese plant has been separated on the strength of its smooth fruit, less hairy calyx lobes, and usually but not always narrower leaves, thus leaving Lindley's name for the tropical and subtropical woolly fruited plants. They are extremely closely allied, but perhaps the latter could not be grown out of doors with us.

"*O. schwerinae* is a shrub of distinct appearance, its foliage very suggestive of some of the Leguminosæ; it is also very elegant in habit and attractive in blossom. But we do not find it hardy in the open, although it survives mild winters. It makes a very delightful wall plant. It can be increased by cuttings made of moderately ripened wood placed in gentle heat. Seed ripens only in favorable years." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 113.*)

40034. POLYGONUM sp. Polygonaceæ.

"(No. 2172a. Tung Tung (near Tangchangpu), Kansu, China. November 19, 1914.) A Polygonum of slender woody growth; a vine, found on open places here and there, covering often whole blocks of scrub or rocky cliffs with its masses of showy white flowers, which appear in late summer and are produced in the greatest profusion. Foliage relatively small and resembling leaves of buckwheat. Able apparently to withstand much drought and adverse conditions. Of decided value as a porch, arbor, pergola, and trellis vine for the greater part of the United States. Collected at an altitude of 5,000 feet."

40035 and 40036. CASTANEA sp. Fagaceæ. **Chestnut.**

40035. "(No. 2173a. Huihsien, Kansu, China. September 28, 1914.) A species of chestnut of medium tall growth; trunk more slender, and bark smoother than in *C. mollissima*, while the leaves, burs, and nuts are smaller. Loves apparently shady situations and damp soil. Of value as a nut-bearing tree, especially for the southeastern United States. Obtained like No. 2166a [S. P. I. No. 40028]."

40036. "(No. 2174a. Chenghsien, Kansu, China. October 4, 1914.) A species of chestnut, said to occur wild in the mountains; apparently the same as the preceding number, 2173a [S. P. I. No. 40035]. Where these chestnuts grow in gardens one also finds some of the following trees, showing how mild the climate is: *Ligustrum lucidum, Trachycarpus* (*Chamaerops*) *excelsus, Hovenia dulcis, Diospyros kaki, Punica granatum, Phyllostachys bambusoides* (*P. quilioi*), etc."

40037. AESCULUS WILSONII Rehder. Æsculaceæ. **Horse-chestnut.**

"(No. 2175a. Chishan, near Chenghsien, Kansu, China. October 1, 1914.) A Chinese horse-chestnut growing into a large tree with an enormous spread of head. Of value as a beautiful shade tree, especially

40000 to 40039—Continued. (Quoted notes by Mr. F. N. Meyer.)

for those parts of the United States where the winters are not too severe. Collected in a temple compound at an altitude of 6,000 feet."

"This beautiful tree has been usually confused with *A. chinensis* Bunge, which differs in its nearly glabrous short-petiolulate leaves sparingly pilose only on the veins below and cuneate at the base, in the smaller flowers and chiefly in the subglobose slightly depressed fruit truncate and slightly impressed at the apex, with thick walls, in the dry fruit 3 to 4 mm. thick, and in the smaller seeds with the hilum occupying one-half or more than one-half of the surface of the seed. It is also closely allied to *A. indica* Colebrooke, which differs in its larger flowers with much broader petals, in the inflorescence with less crowded ascending ramifications, and in the cuneate glabrous leaflets; *A. punduana* Wallich, which more resembles our species in its inflorescence and flowers, is easily distinguished by its very short-stalked cuneate and glabrous subcoriaceous and indistinctly serrulate leaflets." (*Sargent, Plantae Wilsonianae, vol. 1, p. 499.*)

40038. QUERCUS sp. Fagaceæ. **Oak.**

"(No. 2176a. Near Yaopuko (near Chenghsien), Kansu, China. October 6, 1914.) An oak, having medium large, somewhat undulate leaves; grows up into a medium-sized tall tree with a dense head of foliage. Of value as a shade and timber tree for those sections of the United States where the winters are not very severe. Collected at an altitude of 3,500 feet."

40039. CITRUS sp. Rutaceæ.

"(No. 2178a. Lianjapa (near Hsiku), Kansu, China. October 19, 1914.) A peculiar species of citrus of which scions were sent under No. 1221 [S. P. I. No. 39897], which see for further information."

For an illustration of this interesting fruit, see Plate III.

40040 to 40064.

From Sydney, New South Wales. Presented by Mr. J. H. Maiden, Botanic Gardens. Received February 18, 1915. A collection of proteaceous shrubs and trees recommended for trial in the United States.

40040. CONOSPERMUM TAXIFOLIUM Smith. Proteaceæ.

An erect twiggy shrub, with its stem and few branches more or less pubescent, sometimes glabrous. Leaves numerous, scattered, rigid, from one-half to three-fourths of an inch long, linear lanceolate, with a very sharp point. The peduncles are axillary, arising singly from several of the upper leaves, so that taken collectively they form a sort of corymb. Each peduncle is simple or forked, pubescent, furnished with remote, ovate bracts, and terminated by several sessile, pubescent, whitish flowers. (Adapted from *Curtis's Botanical Magazine, pl. 2724.*)

Distribution.—Along streams and near the coast in New South Wales and Queensland, and in Tasmania.

40041 to 40046. GREVILLEA spp. Proteaceæ.

40041 and 40042. GREVILLEA BANKSII R. Brown.

40041. Var. *Alba.* "An evergreen shrub or tree, 12 to 20 feet high. Queensland." (*Guilfoyle, Australian Plants, p. 193.*)

40040 to 40064—Continued.

40042. Received as var. *forsteri*, but *forsteri* is a red-flowered variety of *G. robusta*. This plant on flowering proves to be *G. banksii*.

40043. GREVILLEA CALEYI R. Brown.

Distribution.—A slender shrub about 6 feet tall with handsome pinnately divided leaves which are softly villous underneath and with short racemes of beautiful small red flowers, found in the vicinity of Port Jackson in New South Wales.

40044. GREVILLEA HILLIANA F. Mueller. **Silky oak.**

An Australian tree 50 to 60 feet high and 2 to 3 feet in diameter. Leaves variable, ranging from entire, ovate oblong, 6 to 8 inches long to deeply pinnatifid with 5 to 7 oblong or lanceolate lobes several inches in length (the whole leaf then being more than 1 foot long), glabrous above, more or less silky pubescent beneath. Flowers white, small, and very numerous, in dense, cylindrical racemes, 4 to 8 inches long. (Adapted from *Maiden, Forest Flora of New South Wales, p. 53.*)

40045. GREVILLEA LAURIFOLIA Sieber.

Distribution.—A low or trailing shrub with silky tomentose branches and broadly lanceolate leaves which are smooth above and silky below and with short racemes of small flowers, found on the slopes of the Blue Mountains in New South Wales.

40046. GREVILLEA TRITERNATA R. Brown.

Distribution.—An erect bushy shrub with finely divided leaves having narrow, sharp-pointed segments and terminal racemes of small flowers; found along mountain streams in New South Wales.

40047 to 40053. HAKEA spp. Proteaceæ.

"Drought-resistant plants which endure moderate frosts and are therefore well adapted to the drier parts of the South and Southwest. In California they are grown as far north as Sacramento. One of these, *H. laurina*, produces strikingly handsome flowers; *H. elliptica* is prized for the bronze color of its young foliage; while the spiny leaved species are serviceable for planting in public parks or in any place where it is necessary for shrubs to protect themselves from pedestrians or vandals.

"Hakeas may be propagated by cuttings taken from ripened shoots, but they are almost universally grown from seeds. These are gathered from year-old capsules, which are very hard and must be dried for some time before they will open. The seeds are sown in winter or early spring in the ordinary mixture of sand, leaf mold, and loam; they germinate easily, even without heat. The young seedlings are pricked off into boxes and held in the lath house for a season before planting in the open. For best results Hakeas should be grown in light well-drained soil and need but little water after they are once established; much moisture is injurious except during the summer months." (*Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1427–1428.*)

40047. HAKEA ACICULARIS (Vent.) Knight.

Distribution.—A tall shrub or small bushy tree with cylindrical, sharp-pointed leaves 1 to 3 inches long and white flowers, found from Port Jackson to the Blue Mountains in New South Wales.

40040 to 40064—Continued.

40048. HAKEA DACTYLOIDES (Gaertn.) Cav.

Distribution.—A tall shrub with erect branches, narrow 3-nerved leaves 2 to 4 inches long, and small white flowers in axillary clusters, found along streams in New South Wales.

40049. HAKEA GIBBOSA (Smith) Cav.

Distribution.—A shrub with cylindrical, sharp-pointed leaves 1 to 3 inches long and small white flowers in sessile, axillary clusters, found in the vicinity of Port Jackson in New South Wales.

40050. HAKEA LEUCOPTERA R. Brown.

"This plant is commonly known as the *needle bush* or *pin bush*, and from its fleshy roots a good drinking water can be obtained in the arid regions in which it grows. A circle a few inches deep is dug around the base of the tree; the roots, which run horizontally, are soon discovered. They are divided from the tree and torn up, many of them being several feet in length. They are then cut into pieces, each about 9 inches long, and placed on end in a receiver; and good, clear, well-tasting water is obtained. The timber obtained from this tree is coarse grained and soft; it takes a good polish and is sometimes used for tobacco pipes, veneers, etc. Specific gravity, 0.818." (*Maiden, Useful Native Plants of Australia.*)

"An evergreen shrub, 5 to 8 feet high, with white flowers." (*Guilfoyle, Australian Plants, p. 201.*)

40051. HAKEA MICROCARPA R. Brown.

Distribution.—A shrub up to 6 feet in height, with cylindrical leaves from 1 to 4 inches long and bearing axillary clusters of white flowers with tubes 4 inches long, found in Tasmania and in New South Wales and Victoria, ascending the Australian Alps to an elevation of 6,000 feet.

40052. HAKEA PUGIONIFORMIS Cavanilles.

"Seeds of this plant were received among some of the first arrivals from Botany Bay. It is a free grower and attains a height of 4 or 5 feet, forming a handsome greenhouse shrub and producing plenty of flowers. These are odoriferous, and although not showy have a neat and lively appearance. It may be propagated by cuttings with facility. The most proper soil for it is a mixture of loam and peat. It is by no means a tender plant and merely needs protection from frost in the winter season. It usually blooms in the latter part of the summer." (*Loddiges's Botanical Cabinet, vol. 4, p. 353.*)

40053. HAKEA ULICINA CARINATA Mueller.

"Leaves usually linear lanceolate or linear, pungent, 4 to 8 inches long, prominently 1 to 3 nerved beneath; perianth and pedicels glabrous; fruit rarely above one-half inch long, with a short, straight beak. The foliage resembles the European furze." (*Bailey, Cyclopedia of American Horticulture.*)

Distribution.—A tall shrub found near Adelaide and on the Bugle Range in South Australia.

40054 and 40055. ISOPOGON spp. Proteaceæ.

40054. ISOPOGON ANEMONEFOLIUS (Salisb.) Knight.

Stem shrubby, 3 feet high, villous. Leaves scattered, rigid, nerved, smooth, erect, lengthened downward so as to resemble a

40040 to 40064—Continued.

long footstalk, branched at the upper part into about three pairs of pinnæ, the lowermost of which are longest and various forked at the end; points all armed with a callous reddish mucro or gland. Common flower solitary, globose, sessile. Calyciñe scales ovate acuminate, very woolly except the margin, completely imbricate, forming a globose cone stuffed with a fine white cottony substance. Corolla 1-petaled, tubed; tube longer than limb, which is 4-cleft, hairy, tortuose. Anthers linear, 2-lobed, sessile; style exserted, club shaped. Stigma conical, acute; the style and stigma have a singular appearance in this species, something like two cones with their bases applied together, but when the flowers first open these parts are so entirely covered with the pollen as to appear 4-sided. (Adapted from *Curtis's Botanical Magazine, pl. 697*, and *Johnson, Gardeners' Dictionary.*)

40055. ISOPOGON ANETHIFOLIUS (Salisb.) Knight.

Distribution.—A low shrub 3 to 4 feet high with leaves resembling those of dill (*Anethum graveolens* L.) and bearing conical heads of small yellow flowers, found from Port Jackson to the Blue Mountains in New South Wales.

40056. LAMBERTIA FORMOSA Smith. Proteaceæ.

"Another very striking plant was the Honey flower, with small, pointed glaucous leaves that could inflict a good sharp prick on marauding fingers. The Lambertia, which is said to be confined to this State, has numbers of heavy bell-shaped flowers of scarlet and pink that are usually sticky with a rank honey, much sought after by the pretty little honey eaters, who dip their long, curved bills deep down into these showy blossoms and thus help to propagate the species." (*H. M. Vaughan, An Australian Wander-Year, p. 72.*)

40057. MACADAMIA TERNIFOLIA F. Mueller. Proteaceæ.

Queensland nut.

See S. P. I. No. 18382 for previous introduction and description.

40058 to 40060. PERSOONIA spp. Proteaceæ.

40058. PERSOONIA ANGULATA R. Brown.

Distribution.—A shrub with linear-lanceolate sharp-pointed leaves crowded on the erect branches and with small solitary axillary flowers, found on the slopes of the Blue Mountains in New South Wales.

40059. PERSOONIA MEDIA R. Brown.

Distribution.—A tall, erect shrub with elliptical, falcate leaves and small axillary flowers which are followed by dark-colored berries, found in the valley of the Brisbane River in Queensland and along the Hastings and Clarence Rivers in New South Wales.

40060. PERSOONIA MYRTILLOIDES Sieber.

Distribution.—A spreading shrub about 4 feet high with oblong-ovate leaves and small yellowish white flowers in the axils of the upper leaves, found in the Blue Mountains in New South Wales and at an altitude of 4,000 feet in the Nangatta Mountains in Victoria.

40061 and 40062. PETROPHILA spp. Proteaceæ.

40040 to 40064—Continued.

40061. PETROPHILA PULCHELLA (Schrad.) R. Brown.

Stem shrubby, erect. Leaves alternate, filiform, twice or three times irregularly pinnate; leaflets unequal, divaricate when full grown and not unaptly resembling the antlers of a reindeer, whence it has been known by the name *rangiferina* among cultivators. Flowers white, collected into an oblong-ovate cone, terminal. Bracts obcordate acuminate, quite entire, imbricate, one to each corolla. Corolla 4-petaled; petals equal, adhering half way in the tube, but separating spontaneously when they fall off. Anthers oblong, attached without filament a little below the tip of the petal, as in the rest of the genus. Ovary surrounded with a white, hairy pappus, oblong, thickened at the base, and gradually tapering upward till it terminates in a style that is longer than the corolla, recurved, but after deflorescence erect. Stigma club shaped, hispid, and persistent. (Adapted from *Curtis's Botanical Magazine, pl. 796*, and *Johnson, Gardeners' Dictionary.*)

40062. PETROPHILA SESSILIS Sieber.

Distribution.—A white-flowered shrub 8 to 12 feet high, much resembling *P. pulchella*, but with the segments of the leaves more divaricate and the branches silky tomentose, found on the Blue Mountains in New South Wales and along Moreton Bay in Queensland.

40063. STENOCARPUS SINUATUS Endl. Proteaceæ.

As long ago as 1828 the lamented Allan Cunningham discovered this plant on the banks of the Brisbane River, Moreton Bay, with other interesting novelties. Not, however, meeting with the subject in flower, he took no further notice of it in his journal than to remark that "it is a slender tree, of most remarkable habit, with leaves large from the extremities of the branches, glossy and lobed, or lancinated." Had he seen its blossoms elegantly arranged in candelabrumlike bundles, clothed with the most vivid orange-scarlet silky pubescence, he would assuredly have ranked it amongst the most important of his numerous additions to the Australian flora. It is a plant constituting a small tree 16 feet or more high, with a slender trunk, branched, and bearing the ample and glossy evergreen foliage at the extremities of the branches. Leaves alternate, 1 to 2 feet in length, obovate lanceolate. Flowers umbellate; umbel compound; peduncles lateral from an old branch, or sometimes terminal. (Adapted from *Curtis's Botanical Magazine, pl. 4253*, and *Johnson, Gardeners' Dictionary.*)

40064. TELOPEA SPECIOSISSIMA (Smith) R. Brown. Proteaceæ.

"By many people this plant is known as the *tulip* or *native tulip*. It bears neither affinity nor resemblance to that flower and the name is probably a corruption of Telopea. This plant is known as the *waratah*, which is doubtless an aboriginal name, but its origin does not appear to be clear at the present time. It is a stout, erect, glabrous shrub 6 to 8 feet high bearing a strikingly handsome flower which has come to be recognized as the national flower of New South Wales. It lends itself in a remarkable degree to decorative treatment and hence is frequently depicted literally, or as a motif, in wrought iron, wood and stone carving, stained glass, and pottery decoration. The fruit is technically known

40040 to 40064—Continued.

as a follicle. One *waratah* flower (composed, of course, of a large number of individual flowers) matures, under favorable circumstances, 12 to 20 follicles. The *waratah* is found in the coast and mountain districts of New South Wales, from the Hunter River in the north to the Clyde and Braidwood district in the south. It is one of those plants which finds its southern limits where the sandstone formation ends; it does not pass over to the granite. It delights in rocky situations, and if it were not for the fact that it grows in the Blue Mountains and other coast ranges, frequently in very rough country, it would be threatened with extinction. This plant may be raised from seed, which readily germinates when fresh. The *waratah* is a plant which is coming increasingly into favor in private gardens, and under cultivation it attains a luxuriance unknown in its wild state. It is one of the most gorgeous of all subtropical plants under cultivation. Our experience with it is that it flowers the third year from seed. It is a stout, erect shrub of 6 to 8 feet, Leaves cuneate oblong or almost obovate, 5 to 10 inches long, mostly toothed in the upper part, tapering into a rather long petiole, coriaceous, penniveined with the midrib prominent, a few rarely quite entire. Flowers crimson, in dense ovoid or globular heads or racemes about 3 inches in diameter. Involucral bracts colored, ovate lanceolate, the inner ones 2 to 3 inches long, the outer ones few and small, surrounded by a dense tuft of floral leaves like the stem ones, but smaller and more entire. Bracts under the pairs of flowers very short; pedicels thick, recurved, one-fourth to one-half inch long. Perianth glabrous, nearly 1 inch long. Ovules 12 to 16, fruit recurved, 3 to 4 inches long. Seeds 10 to 20, the nucleus broad, obliquely quadrate, the wing obliquely truncate, one-fourth to one-half inch long." (*Maiden, Flowering Plants and Ferns of New South Wales, part 1, 1895.*)

40065. Lithocarpus cornea (Lour.) Rehd. Fagaceæ.

(*Quercus cornea* Lour.) **Evergreen oak.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received March 6, 1915.

See S. P. I. No. 35320 for previous introduction and description.

40066 to 40068.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 4, 1915.

"Collected in Japan by Mr. E. H. Wilson."

40066. Clethra barbinervis Sieb. and Zucc. Clethraceæ.

Wilson No. 7039.

"A deciduous shrub, 3 to 6 feet high in cultivation, more bushy and less erect than the American species; young shoots at first sprinkled with a minute starry down. Leaves often clustered at the end of the twig, oval or obovate, more tapering at the base than at the apex; 2 to 5 inches long, 1 to 2¼ inches wide; hairy at first on both sides, but especially so on the midrib and nerves beneath, toothed; stalk one-fourth to three-fourths inch long. Flowers white, one-third inch across, produced from July to September in a rather compact, terminal panicle 4 to 6 inches long, covered with white, starry down; calyx and seed vessel hairy; stamens smooth.

40066 to 40068—Continued.

"Native of Japan and China; introduced in 1870. It is a very pretty shrub where it thrives, but it is not so hardy as *C. alnifolia*, although it will survive all but the severest winters near London. The leaves have usually two more pairs of veins than the American species." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 372.*)

40067. PRUNUS SSIORI Schmidt. Amygdalaceæ. **Bird cherry.**

Wilson No. 7648.

Distribution.—A wild cherry found on Sakhalin Island, in Honshu and Hokushu in Japan, and in southern Manchuria and western China.

"Although, according to Sargent, this bird cherry is a common tree in Yezo [Hokushu] and in the mountain forests of Hondo [Honshu], Japan, it has only recently been brought into cultivation. The same author (*Forest Flora of Japan, p. 38*) observes that it is always easily distinguished by its pale, nearly white bark. Young shoots smooth. Leaves oblong, often inclined to obovate, the apex drawn out into a long slender point, the base more or less heart shaped, the margin closely set with fine, almost bristlelike teeth; thin membranous, smooth above and the same beneath except for the tufts of brownish down in the vein-axils; stalk slender, 1 to 1½ inches long, with one or two glands near the blade. Flowers small, white, produced in slender, glabrous, cylindrical racemes 4 to 6 inches long and about 1 inch wide. The species has been found in Manchuria and Sakhalin. 'The wood is very hard and close grained, and is used by the Ainos for numerous domestic purposes.' (*Sargent.*)" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 254.*)

40068. SCHIZOPHRAGMA HYDRANGEOIDES Sieb. and Zucc. Hydrangeaceæ.

Wilson No. 7671.

"A deciduous climbing shrub, reaching 40 or more feet high in a wild state; young stem smooth, reddish, and furnished with aerial roots. Leaves broadly ovate with a rounded, heart-shaped or tapering base; 4 to 6 inches long, 2½ to 4 inches wide; strongly veined, coarsely and angularly toothed, deep green and smooth above, but paler, rather glaucous, and with silky hairs beneath; stalk 1 to 2 inches long. The leaves near the inflorescence are tapered at the base; those on sterile shoots heart shaped. Flowers small, yellowish white, slightly scented, produced during July in a broad, flattish, cymose inflorescence 8 or 10 inches across. The chief feature of the inflorescence is the bracts, one of which terminates each main branch of the cyme, and is heart shaped or ovate, pale yellow, 1 to 1½ inches long; flower stalks furnished with a thin, loose down.

"Native of Japan, where, along with *Hydrangea petiolaris*, it forms a conspicuous feature in the forests, often covering the trunks of large trees. In gardens it is rare, the plant grown under the name being almost invariably *Hydrangea petiolaris*, which it resembles in habit, but in respect to leaf and inflorescence it is quite distinct. It flowered with the late Mr. Chambers at Haslemere in 1905 for the first time, so far as I am aware, in this country. It has since flowered with Miss Willmott at Warley and with Sir E. Fry near Bristol. The floral bracts are variable in size and shape." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 505.*)

This vine will cling to a brick or cement wall just as English ivy will, and it forms a beautiful cover with its white bracts. It is hardy and deserves a place in all gardens. (*Fairchild.*)

40069 to 40071.

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Gardens. Received March 3, 1915.

40069. ARCHONTOPHOENIX ALEXANDRAE (Muell.) Wendl. and Drude. Phœnicaceæ. **Palm.**

A showy and elegant palm, completely spineless, and with tall, stout, 70 to 80 foot trunks, which are conspicuously ringed by the annular scars of the fallen leaves. Leaves divaricate, terminal, several feet long, forming a large crown, pinnately divided, the segments entire or toothed, numerous, the longer ones 1½ feet long, one-half to 1 inch broad, acuminate and entire or slightly notched, green above, ashy glaucous beneath; in very young specimens the leaves are undivided or simply bipartite; midrib prominent, the ribs more slender; rachis very broad and thick, glabrous or slightly scurfy, keeled above, convex beneath, the petiole slightly tomentose, and channeled above; inflorescence appearing much below the leaves, about 1 foot long, consisting of two long flattened, ultimately pendent and deciduous spathes, inclosing the short-peduncled and much-branched, pendulous spadices; flowers monœcious, greenish yellow, sessile on the branches of the spadix; in male flowers the eight perianth segments are unique in the family; female flowers with three perianth segments, sometimes more; fruit a drupe, ovoid globular, containing a single fibrous seed. Seldom ripening fruit on plants cultivated outdoors in California, and rather tender when young. Native of Queensland. (Adapted from *Norman Taylor. In Bailey, Standard Cyclopedia of Horticulture.*)

40070. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

See S. P. I. Nos. 26170, 33781, and 36714 for previous introductions and descriptions.

40071. SPATHODEA NILOTICA Seemann. Bignoniaceæ.

Distribution.—A bushy tree 15 to 20 feet high with racemes of large scarlet flowers, found in the upper Nile Valley, in Kongo Free State, and in German East Africa.

40072 and 40073.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul. Received March 3, 1915. Quoted notes by Mr. Goding.

40072. PASSIFLORA sp. Passifloraceæ. **Passion fruit.**

"Seeds collected from plants growing 10,000 feet above sea level."

40073. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Wild cherry.**

"*Capulies.* Wild cherry; grows in cold districts."

See S. P. I. Nos. 36371 and 38637 for previous introductions and descriptions.

40074. ENKIANTHUS CAMPANULATUS (Miq.) Nichols. Ericaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received March 8, 1915.

Wilson No. 6897. A variety collected in Japan by Mr. E. H. Wilson.

The species is described as "a deciduous shrub usually 4 to 6 feet high, occasionally a small tree, branches in whorls; young shoots smooth, reddish.

Leaves produced in a cluster at the end of the twig, or alternate on strong growths; obovate to oval, tapered more gradually toward the base, finely toothed, 1 to 2½ inches long, one-half to 1¼ inches wide, hairy on the veins of both surfaces, dull green; stalk one-eighth to five-eighths inch long. Flowers produced during May from the terminal bud of the previous year's growth in a hairy raceme sometimes almost reduced to an umbel. Corolla bell shaped, one-third inch long, pendulous, with five rounded lobes, pale creamy yellow, veined and tipped with red; calyx with five lanceolate, pointed divisions one-sixth inch long; stamens very short; flower stalk downy, one-half to 1 inch long. Seed vessel egg shaped, one-third inch long.

"Native of Japan, introduced in 1880 by Maries, for Messrs. Veitch. This is the most satisfactory of the species of Enkianthus in our gardens, being quite hardy and flowering freely. It is sometimes cut by late frost. In the Arnold Arboretum, Massachusetts, where the frosts are much more severe than ours, it succeeds remarkably well. The leaves turn golden and red in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 512.*)

40075. Passiflora edulis Sims. Passifloraceæ. **Passion fruit.**

From Guemes, Argentina. Presented by Mr. H. F. Schultz, director, Agricultural Experiment Station, Guemes. Received March 4, 1915.

"Seed from fruits cultivated in San Lorenzo de Jujuy. I consider this variety of passion fruit a very important acquisition for the localities where it may be feasible to grow it in the United States. I have eaten different varieties of *P. edulis* and the very large *P. quadrangularis* of Panama, the fruits of which, as you know, sometimes attain a length of 25 cm. and a diameter of 15 cm. I consider the fruits very delicious and peculiarly tempting to the palate, as well for a breakfast fruit as for dessert, and most important perhaps for soft-drink manufacture, this latter especially on account of its rich and pleasing flavor and fragrance. The few plants which I have been growing here and which are now about a year old, have already yielded quite a number of fruits, which are light-purple skinned, of usual egg-shaped form, and from 5½ to 7 cm. long and 4½ to 5 cm. in diameter. The seeds are eaten, together with the peculiarly tinted, greenish pulp, because they form no disturbing element at all. It requires a little practice to separate the mass of pulp and seeds from the tough, leathery exterior by means of a teaspoon after the fruit is halved, just as it is necessary for the novice to acquire the desired proficiency in eating a grapefruit without danger to his own and his neighbor's eyes and clothes. The fruits do not seem to possess any of the narcotic principles which Grisebach states are present in some Passiflora species, for I have repeatedly eaten a dozen fruits at a sitting, and my children eat from 10 to 20 a day without any bad effects. The fruits keep a very long time and are palatable and wholesome even after the leathery skin has dried or crumpled up. I presume that these passifloras are more peculiarly suited to California than to Florida conditions, because San Lorenzo is situated in a dry, warm climate where frosts are very uncommon. Truly enough the short rainy season, which lasts from about January until March, during which time there are copious precipitations, agrees quite well with these plants, too, for which reason they may also do surprisingly well in Florida. Mr. Smyth, from whom I obtained this strain, states that his plants last, according to soil conditions, from 3 to 8 years, while I understand that in Queensland they fruit for 20 to 50 years." (*Schultz.*)

40076 to 40093. HOLCUS SORGHUM L. Poaceæ. Sorghum.

(*Sorghum vulgare* Pers.)

Numbered March 15, 1915.

40076 to 40088.

Presented by the Usumbwa Company, Nyembe Bulunswa, Port Tabora, German East Africa.

40076. Brown durra. *Holongo wape.*
40077. White durra. *Mgegene.*
40078. White durra. *Mkulapolo.*
40079. White durra. *Yembayemba.*
40080. White durra. *Ikululukizi.*
40081. *Kangwala.*
40082. *Upolo.*
40083. *Kagiri.*
40084. White durra. *Luwele.*
40085. *Upolo wamagohe.*
40086. Red shallu. *N.*
40087. Brown durra. *K.*
40088. Brown durra. *T.*

40089 to 40093.

From Victoria, Kamerun, German West Africa. Presented by the director of the experiment station.

40089. Brown durra. *Gabli sambull.* From the Mora residency in the German lands near Lake Chad. Sown at the rainy season.

40090 to 40093.

From Pittoa near Garua. Brown durra.

40090. *Gewerie.*
40091. No. 3. *Danki-polari.*
40092. No. 4. *Dschundi Rei.*
40093. *Bita* (from Tahiti). Red shallu.

40094 to 40098.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received March 1, 1915, Quoted notes by Mr. Itié except as otherwise indicated.

40094 and 40095. CAPSICUM spp. Solanaceæ. Red pepper.

40094. "Seeds of *chili masch.* Spontaneous. Little shrub, perennial. Leaves and flowers small. Fruit very short, almost round. White and reddish at first and then black or brown when mature. Very piquant."

40095. "*Pico de paloma,* seeds of chili. Spontaneous. Is distinguished from the preceding [S. P. I. No. 40094] by its larger fruit, attaining from 1 to 2 cm. in size. Likewise very piquant."

40096. RICINUS COMMUNIS L. Euphorbiaceæ. Castor bean.

"Seeds of *higuerilla.* Gathered in the fields of the station. Spontaneous in the State, but not known, in spite of its abundant fruiting qualities and its richness in oil. At least two varieties are distinguished—one with brown petioles and one with white petioles. The seeds sent are of the latter."

40097. DIPHYSA SUBEROSA S. Watson. Fabaceæ.

"Seeds of *chipilcoite.* This legume grows wild in this State and is sown also for stakes for fences. Its wood is one of the most appre-

40094 to 40098—Continued. (Quoted notes by Mr. G. Itié.)

ciated for its durability and resistance to the agents of decay, damp, and insects. It keeps well in water. It is used much for telegraph posts, sleepers, and to strengthen the base of poles of more common wood."

40098. SPONDIAS LUTEA L. Anacardiaceæ.

"Seeds of *Hobo*. Wild and cultivated. This is the wood most commonly employed for fences by reason of its easy propagation, for hedges and for the wonderful rapidity of its growth. The white and light wood is employed for the manufacture of packing boxes."

"*Jobo*. A large tree, with rounded head, compound leaves, and odorous white flowers in racemes, and yellow fruits resembling large jocotes (*Spondias purpurea*). They are very aromatic and the taste is acid and refreshing. The wood is white and soft and appears not to be used except in the fences of the tierra caliente." (*Pittier, Las Plantas Usuales de Costa Rica.*)

40099. QUERCUS SUBER L. Fagaceæ. **Cork oak.**

From Campo Seco, Cal. Procured from Mrs. Edward Maher. Received February 23, 1915.

40100. PYRUS sp. Malaceæ. **Pear.**

From Chingchowfu, Shantung, China. Presented by Rev. W. M. Hayes. Cuttings received March 27, 1915.

"Chinese winter pear. This variety is really not ripe until the next spring after it is picked, and while not as luscious as a good apple, yet it fills a vacancy in April and May very acceptably." (*Hayes.*)

40101. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens, Received March 13, 1915.

40102. PLEIOSPERMIUM ALATUM (Wight and Arn.) Swingle. Rutaceæ.
(*Limonia alata* Wight and Arn.)

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received March 16, 1915.

A small spiny tree from southern India and Ceylon, with 4 to 5 celled small soft-rinded orangelike fruits, about an inch in diameter, each cell having 1 to 2 seeds, surrounded by dark-colored, strong-smelling, mucilaginous gum. From the fact that *P. alatum* grows abundantly in the drier parts of Ceylon, it would be desirable to test it as a stock on which to graft citrus for culture on the drier types of soil. (Adapted from *Swingle, Journal Washington Academy of Sciences, vol. 6, p. 426–431, 1916.*)

40103. GARCINIA TINCTORIA (DC.) W. F. Wight. Clusiaceæ.
(*Garcinia xanthochymus* Hook.)

From Utakamand, India. Presented by Mr. F. H. Butcher, curator, Botanic Garden and Parks. Received March 17, 1915.

"A symmetrical cone-shaped bushy tree, growing to 25 or 30 feet high, native of South India and Malaya. It bears large leathery leaves, 12 to 16 inches long and 2½ to 3½ inches in width. The handsome yellow fruit, produced in great

abundance in December and January, is of the form and size of a small orange, usually with a pointed projection at the end, the tender thin skin being smooth and polished. The yellow juicy pulp is of an acid but refreshing taste. The tree is propagated by the large seeds, and thrives up to about 3,000 feet or more." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

40104. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Alajuela, Costa Rica. Presented by Mr. F. W. Smith, at the request of Dr. Inksetter. Cuttings received March 18, 1915.

40105. VITIS VINIFERA L. Vitaceæ. **Grape.**

From Alicante, Spain. Presented by Señor Gregorio Cruz Valero, director, Estacion Enologica. Cuttings received March 18, 1915.

"The *Lairen* grape, I am of the opinion, is the same as *Listan* or *Palomino*, at the present time extensively grown in California as the *Golden Chasselas*." (*George C. Husmann.*)

40106 to 40138.

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received March 8, 1915. Quoted notes by Mr. Noss.

"From an exhibition in Kawamata, near Fukushima City."

40106 to 40127. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

40106. "*Mochidaizu* (*dai*, large; *zu*, bean), used in *mochi* (glutinous rice boiled and pounded in a mortar)."

40107. "No. 2. *Nakatedaizu* (second early), used in *miso* (beans, etc., pickled in salt and made into soup), *tofu* (bean curd)."

40108. "No. 3. *Shichi-ri-korobi-daizu* (20-mile rolling), used for *tofu*, *miso*, and *soy*."

40109. "No. 4. *Yuki-no-shita-daizu* (under the snow), used for *tofu*, *soy*, and *miso*."

40110. "No. 5. *Wasedaizu* (early), used for *tofu*, *soy*, and *miso*."

40111. "No. 6. *Misodaizu*."

40112. "No. 7. *Ko-tsubu-daizu* (small grain), used for *miso* and *natto* (buried, fermented, and eaten as a relish)."

40113. 'No. 8. *Kinako-daizu*, made into *kinako* (a flour used in cooking) and also *natto*. Said to have been brought by soldiers from Manchuria.

40114. "No. 9. *Tamazukuridaizu* (name of a county near Sendai), used boiled."

40115. "No. 10. *Asahidaizu* (morning sun), used for *natto*."

40116. "No. 11. *Darumadaizu* (Dharma, whose image is a roly-poly, can not be upset), used boiled and for *tofu*."

40117. "No. 12. *Taiwandaizu* (Formosa), used boiled."

40118. "No. 13. *Hato-koroshi-daizu* (dove killer), used boiled."

40119. "No. 14. *Usu-ao-daizu* (light green), used for *kinako* and boiled."

40106 to 40138—Continued. (Quoted notes by Rev. C. Noss.)

40120. "No. 15. *Ao-daizu* (green), used for *kinako* and boiled."

40121. "No. 16. *Aka-kuki-daizu* (red stalk), used for *natto* and *miso*."

40122. "No. 17. *Fuku-shiro-daizu* (clothing white), used for *tofu*."

40123. "No. 18. *Hachi-ri-han-daizu* (21 miles), used boiled. The name *Hachi-ri-han-daizu* involves a curious play on words. *Hachi-ri-han* means 'eight ri (a ri is 2½ miles) and a half,' which is just a little short of *ku-ri*. Now, *ku-ri* means nine ri, and *kuri* also means chestnut, so the expression in question means that the beans so named are almost equal to chestnuts."

40124 to 40127. "Beans are used boiled."

40124. "No. 19. *Yoshiwaradaizu* (harlot quarters in Tokyo)."

40125. "No. 20. *Chadaizu* (tea, alluding to the color)."

40126. "No. 21. *Kichidaizu* (lucky)."

40127. "No. 22. *Kurodaizu* (black)."

40128. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"*Mamegaki* (bean persimmon). The edible Japanese persimmon is grafted on the stock of this tree."

40129 to 40134. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. **Adzuki bean.**

"Beans are made into *an* (boiled, strained, and mixed with brown sugar) and boiled and mixed with boiled rice to make *akameshi* (red food)."

40129. "No. 24. *Akaazuki* (*aka*, red; *azuki*, little bean)."

40130. "No. 25. *Nakateazuki* (second early)."

40131. "No. 26. *Shiroazuki* (white)."

40132. "No. 27. *Okuteazuki* (late)."

40133. "No. 28. *Kataazuki* (mottled, figured)."

40134. "No. 29. *Dainagon azuki*."

40135. PHASEOLUS COCCINEUS L. Fabaceæ.

"No. 23. *Daikwodaizu* (great light), boiled and made into cakes."

40136 to 40138. PISUM spp. Fabaceæ.

"The pods are boiled in soup with miso."

40136. PISUM ARVENSE L. **Field pea.**

"No. 32. *Itaria Osaya* (Italian large pod)."

40137 and 40138. PISUM SATIVUM L. **Pea.**

40137. "No. 31. *Nion Saya*."

40138. "No. 30. *Nion Kinu Saya* (Japan silk pod)."

40139 to 40201.

From Kew, England. Presented by the director, Royal Botanic Gardens. Received March 5, 1915.

40139 to 40153. BERBERIS spp. Berberidaceæ. **Barberry.**

40139. BERBERIS sp.

Received as *Berberis vilmoriniana*.

40139 to 40201—Continued.

40140. BERBERIS HOOKERI VIRIDIS Schneider.

Differs from the typical form in having the leaves bright green underneath.

40141. BERBERIS SUBCAULIALATA Schneider.

See S. P. I. Nos. 37497 and 39575 for previous introductions and description.

"This species belongs to the same group as *B. stapfiana* [S. P. I. No. 37975], but it has globose fruits ripe in November, more distinctly angled branchlets, and larger leaves; the general aspect is otherwise very similar." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40142. BERBERIS AGGREGATA Schneider.

See S. P. I. Nos. 34550 and 39574 for previous introductions and description.

"A small, spreading bush. Leaves in rosettes about nine together, ovate to oblanceolate, entire or with a few teeth or spiny hairs in the upper half, dull green above, gray-green beneath, usually about one-half inch long and one-fourth inch broad. Berries small, creamy green, suffused with coral, in dense sessile clusters. China." (*Kew Bulletin of Miscellaneous Information, 1914, Appendix, p. 58.*)

40143. BERBERIS ANGULOSA Wall.

See S. P. I. Nos. 27115 and 33016 for previous introductions.

"A deciduous shrub, 4 feet or more high, with erect, grooved branchlets covered when young with a short, dark down. Leaves dark, glossy green, clustered in the axils of stiff spines, which are sometimes single, but usually wedge shaped, 1 to 1½ inches long, leathery, narrowing at the base to a very short stalk or none at all, the apex either rounded or pointed, often terminating in a short tooth; the slightly curled back margins are either entire or have 1 to 3 spiny teeth at each side. Flowers solitary, on stalks one-half to 1 inch long, or on short two to four flowered racemes; orange-yellow, globose, one-half to two-thirds inch across; outer sepals narrow oblong, inner one twice as wide; petals obovate. Fruit elliptical, two-thirds inch long, scarlet.

"Native of north India; first discovered in Kumaon early in the 19th century and in 1849 by Hooker in the Sikkim Himalayas, at 11,000 to 13,000 feet. It is absolutely hardy at Kew, and, although not one of the showiest barberries, is noteworthy for its unusually large flowers and berries. The latter are eatable, and, being less acid, are more palatable than most barberries." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 234.*)

"*Berberis angulosa* is a rare Himalayan species and one of the largest flowered and fruited of the 13 found in that mountain range; it is also one of the most distinct. In Sikkim it forms a shrub 4 feet high and more . . . and forms a striking object in autumn from the rich golden yellow and red coloring of the foliage." (*Curtis's Botanical Magazine, pl. 7071.*)

40144. BERBERIS ARISTATA DC.

See S. P. I. Nos. 27116, 32789, and 33017 for previous introductions.

"A very handsome shrub, of spreading, elegant habit, as much as 10 feet high and 15 feet in diameter, with smooth young branchlets

40139 to 40201—Continued.

becoming gray the second season. Ordinarily it is deciduous, but young plants or vigorous sucker growths will retain their foliage through the winter. Leaves 3 to 7 in a tuft, 1½ inches long in each tuft, obovate, green on both sides, or often whitish beneath; always spine tipped, but varying from few or numerous teeth on the margins to none at all. Each tuft of leaves springs from a single or triple spine, sometimes 1¼ inches long, and produces one drooping raceme 2 to 3 inches long. Flowers numerous, bright golden yellow. Berries spindle shaped or oblong, up to one-half inch long, red, covered with blue-white bloom.

"Native of the Himalayas, and represented by a great number of slightly varying forms, all of which are valuable garden plants. Of all deciduous barberries this is the strongest growing; it is also one of the most ornamental. It is an admirable shrub on a spacious lawn, almost as striking when loaded with its fine trusses of blue-white berries as when it is in bloom. So well adapted to our climate is it that it has been found wild in English hedgerows, having grown there, no doubt, from seeds deposited by birds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 235–236.*)

40145. BERBERIS CONCINNA Hook. f.

See S. P. I. Nos. 27117 and 33018 for previous introductions.

"The seeds (of the original collection) were gathered from small bushes growing in the Lachen Valley of the Sikkim Himalayas, at an elevation of 12,000 to 13,000 feet; it there formed a small, low bush, 1 to 3 feet high, with spreading almost prostrate branches, thickly covered with small leaves of a deep-green hue and polished above, snowy white and glaucous below; these colors, the large oblong scarlet berries, and red branchlets giving the shrub a singularly neat and pretty appearance when in fruit." (*Hooker. In Curtis's Botanical Magazine, pl. 4744, 1853.*)

"A low, deciduous bush, 3 feet high, of close, compact habit, branches furrowed. Leaves lustrous green above, white beneath, obovate, 1 inch or less long, tapering at the base to a short stalk, the midrib ending in a tuft of leaves. Flowers solitary, on a slender stalk 1 to 1½ inches long, pendent, globose, deep yellow, one-half inch across. Berries oblong, fleshy, red, one-half to three-fourths inch long.

"Native of the Sikkim Himalayas, at 12,000 to 13,000 feet; introduced to Kew by Sir Joseph Hooker about 1850. A very pretty barberry, and distinct through the vivid whiteness of the under surface of the leaves. It is best propagated by seeds, which it produces most seasons." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 238.*)

40146. BERBERIS DIAPHANA Maxim.

Scarlet-fruited, yellow-flowered bush, 1 to 2 meters high, from western Szechwan, China, nearly related to *B. macrosepala* of the Sikkim Himalayas, which has puberulous branchlets and is not found in China, and to *B. yunnanensis*, which has thinner, mostly entire, leaves, three to eight flowered, often rather elongated inflorescences, and only three to four ovules and seeds. This barberry may be distinguished by its chartaceous leaves, distinctly reticulate on

40139 to 40201—Continued.

both sides, and mostly spinose serrate, one to four flowered inflorescence, and by the more numerous (six to eight) ovules and seeds. (Adapted from *Schneider, in Plantae Wilsonianae, vol. 1, p. 354, 1913.*)

40147. BERBERIS GAGNEPAINI Schneider.

See S. P. I. Nos. 32701 and 37495 for previous introductions and description.

"An evergreen shrub, 3 to 6 feet high. Leaves lanceolate, 2 to 4 inches long, one-fourth to three-fourths inch broad, tapering very much toward the apex, coriaceous, spiny on the margin, spines at the bases of the leaves tripartite, one-half to two-thirds inch long. Flowers in fascicles of usually five to nine, delicate yellow, borne on red pedicels. Fruits ellipsoid, glaucous purple. This is figured in Curtis's Botanical Magazine, pl. 8185, as *B. acuminata*, but the true *B. acuminata* Franch. is less compact in habit, has larger, coarser, and thicker leaves, and stouter spines. China." (*Kew Bulletin of Miscellaneous Information, 1910, Appendix iii, p. 60.*)

40148. BERBERIS POLYANTHA Hemsl.

See S. P. I. No. 32698 for previous introduction and description.

"A deciduous shrub, 6 to 10 feet high, the young shoots reddish brown, ribbed, not downy; thorns solitary or three pronged, one-half to 1 inch long. Leaves obovate and mostly rounded at the end, the larger ones toothed at the terminal half, the smaller ones frequently entire, all tapered and wedge shaped at the base; one-half to 2 inches long, one-eighth to two-thirds inch wide; finely netveined on both sides, not downy; stalk one-fourth inch or less long. Flowers yellow, produced during June and July in drooping panicles 3 to 4 inches long, 1 to 1½ inches wide, carrying 20 to over 50 blossoms. Fruit red.

"Discovered in 1899 by Mr. A. E. Pratt, near Tatsienlu, Szechwan, western China; introduced from the same region by Wilson in 1904. A very fine species, remarkable for the large and abundant flower panicles." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 246.*)

40149. BERBERIS PRATTII Schneider.

See S. P. I. No. 37496 for previous introduction.

"This western Szechwan shrub, 6 to 10 feet tall, was first collected by Mr. A. E. Pratt in the neighborhood of Tatsienlu. It was subsequently met with there and at Muping by Mr. E. H. Wilson, when collecting for Messrs. James Veitch & Sons. Originally included by Hemsley in *B. polyantha*, this Berberis has been kept apart by Schneider on account of its less closely reticulated leaves and narrower inflorescence. But while perhaps most closely related to *B. polyantha* Hemsley, *B. prattii* most resembles *B. brevipaniculata* C. K. Schneid., with which it has been confused in collections, though it is readily distinguished by the pale green but not glaucous lower surface of the leaves. Like *B. brevipaniculata*, our plant is a shrub of dense growth, forming a mass of twiggy branches out of which are thrust each year a number of long whiplike shoots. More beautiful when in flower than most Chinese species of the genus, it is

40139 to 40201—Continued.

still more effective when laden in September with its branches of salmon-red fruits. The shrub grows very freely and is apparently quite hardy; the freedom with which it fruits promises to make its propagation easy. Like other species of Berberis, this one enjoys a well-drained loamy soil." (*Curtis's Botanical Magazine, pl. 8549.*)

40150. BERBERIS STAPFIANA Schneider.

See S. P. I. No. 37975 for previous introduction and description.

"A deciduous, or partially evergreen, glabrous shrub, probably 5 or 6 feet high, of elegant habit, the stems spreading and arching; leaf clusters one-third inch apart, spines three pronged, very slender and needlelike, brown, one-third to three-fourths inch long. Leaves oblanceolate, rounded to pointed at the apex, mostly entire, but sometimes toothed near the end, tapered at the base; one-half to 1 inch long, one-twelfth to three-sixteenths inch wide; scarcely stalked, of hard texture. Flowers pale yellow, globose, one-sixth inch wide, borne four to seven together in axillary, stalkless, or very shortly stalked clusters. The stalk of the individual flower is one-eighth to one-sixth inch long. Fruit oval, carmine red with a slight bloom, one-fourth inch long, containing two or three seeds.

"Native of western China; introduced to Kew from St. Petersburg in 1896, and later from Wilson's seeds. M. Maurice de Vilmorin has also grown it for some years at Les Barres, in France. It is a charming shrub, of free, graceful growth, allied to *B. wilsonae*, but that species is distinguished by its downy shoots." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40151. BERBERIS VIRESCENS Hook. f.

See S. P. I. Nos. 27122 and 30753 for previous introductions.

"An elegant, deciduous shrub, 6 to 9 feet high; with smooth, reddish brown, shining branches, armed at each leaf tuft with a slender, 3-parted or single spine up to three-fourths inch long. Leaves two-thirds to 1¼ inches long, obovate, thin, pale but bright green; the apex round or tipped with a small spine, the margins toothed or entire. Flowers one-third inch in diameter, pale greenish or sulphur yellow, and produced on slender, short stalks, either in panicles or short racemes. Berries slender, nearly one-half inch long, reddish, covered with bloom.

"Discovered by Sir Joseph Hooker, at an elevation of 9,000 feet, in Sikkim, in 1849, and introduced to Kew about the same time; this barberry was not given specific rank until described 40 years after. It is not one of the most attractive of barberries in regard to its flowers or fruit, but its habit is elegant, and the red tinge of its stems is pleasing in winter. There are two forms of the species at Kew, one regarded as typical, with red fruits; the other, var. *macrocarpa*, with large black fruits five-eighths inch long." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 251.*)

40152. BERBERIS WILSONAE Hemsl.

"An elegant, deciduous, sometimes partially evergreen shrub, 2 to 4 feet high, of spreading habit, and usually more in diameter; branches comparatively thin, reddish brown, slightly downy, armed with slender 3-parted spines one-half to three-fourths inch long, and red when young. Leaves as a rule less than 1 inch long, otherwise

40139 to 40201—Continued.

entire, or occasionally three lobed at the apex; smooth, conspicuously veined, gray-green above, somewhat glaucous beneath. Flowers small, pale yellow, borne two to six together in fascicles or short racemes. Berries roundish, coral or salmon red, somewhat translucent, borne very abundantly. Native of western China; discovered and introduced about 1904 by Mr. E. H. Wilson, after whose wife it is named. This is one of the most charming new introductions from western China, of neat yet elegant habit, and most noteworthy for its prettily colored, abundant berries. The leaves are said by Wilson to assume brilliant tints in autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

40153. BERBERIS YUNNANENSIS Franchet.

"A deciduous shrub, 3 to 6 feet high, of dense, rounded habit, with gray, smooth branchlets, armed with 3 or 5 parted spines. Leaves obovate, sometimes almost orbicular, three-fourths to 1½ inches long, one-third to two-thirds, rarely 1 inch wide, rounded or pointed at the apex, tapering to a stalk at the base; margins mostly entire on the flowering twigs, more often toothed on the sterile ones. Flowers pale yellow, three to eight in a cluster; three-fourths inch across, flower stalks slender, three-fourths to 1¼ inches long. Berries oval, bright red, one-half inch long. Native of western China: first discovered in Yunnan by Delavay in 1885, at an altitude of 10,000 feet. It reached cultivation by way of France, and was introduced to Kew in 1904. It is a pretty shrub, and is distinct in regard to the size of its flowers and fruit, both of which are amongst the largest in the genus. It is also one of the most beautiful in its autumn livery of crimson." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

40154 and 40155. BETULA spp. Betulaceæ. **Birch.**

40154. BETULA ERMANI Cham.

A tree said to become 100 feet high; bark of the trunk peeling, creamy white; that of the branches orange-brown. Leaves broadly ovate, with a straight or slightly heart-shaped base, taper pointed, coarsely triangular toothed; 2 to 3 inches long, 1½ to 2½ inches broad. Native of Manchuria, Korea [Chosen], Japan, and, like many other plants from the same region, very liable to injury by spring frosts, owing to its early start into growth. For this reason it does not form a clean trunk and is subject to fungoid attacks. (Abridged from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 256.*)

40155. BETULA ERMANI NIPPONICA Maxim.

A Japanese form. This variety thrives better in cultivation through starting later into growth, and makes a clean-grown, handsome birch—one of the most striking of the white-stemmed group. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 256–257.*)

40156. CALOPHACA WOLGARICA (L. f.) Fisch. Fabaceæ.

"A deciduous shrub, said to become 6 feet high, but rarely more than half as high in this country [England]; bark of branches downy when quite young, peeling when old. Leaves pinnate, 2 to 3 inches long, com-

40139 to 40201—Continued.

posed of 11 to 17 leaflets. Racemes produced from the leaf axils of the current year's growth, 3 to 5 inches long, very downy, carrying four to nine flowers toward the end. Flowers yellow, pea shaped, three-fourths to 1 inch long, each on a stalk one-eighth inch long; calyx downy, one-third inch long, with slender, pointed teeth. Pod three-fourths to 1¼ inches long, cylindrical, covered with glandular hairs, one or two seeded. Blossoms in June and July. Native of the southeastern part of European Russia, in the regions of the Rivers Volga (from which it takes its name) and Don. It is frequently found in arid places and on dry hillsides. Introduced in 1756. It is quite hardy in the south of England, but may need the protection of a wall in the north. It likes abundant sunshine, and during hot summers flowers profusely. It is only after such seasons that seeds ripen. As a rule, it is grafted on standards of laburnum or Caragana, when it forms a big, mop-headed plant with semipendent branches. Plants raised in that way are sometimes short lived, but it is probably the best and easiest way, for plants raised from seed are not easy to rear. They are very liable to decay through damp during the winter, and should for two years be kept in pots, then planted out on a well-drained site. When grafted on the laburnum, no special precautions are needed." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 282.*)

40157 and 40158. CARAGANA spp. Fabaceæ.

40157. CARAGANA AURANTIACA Koehne.

"A deciduous shrub about 4 feet high, with graceful, ultimately pendulous, leafy branches, long, slender, but little divided, and armed with triple spines. Leaves very short stalked, consisting of four narrow, linear leaflets, one-third to one-half inch long, one-eighth inch wide. Flowers three-fourths inch long, produced singly on a stalk one-fourth inch long, orange yellow; calyx three-sixteenths inch long, bell shaped, with five triangular, minutely ciliated teeth. Pod 1 to 1½ inches long, smooth, rather cylindrical, pointed, carrying four to six seeds.

"Native of central Asia; introduced in 1887 as a variety of *C. pygmaea*, of which it was at first regarded merely as a deeper colored form. It differs also in the more taper-pointed leaflets and in the shorter calyx. This and *C. pygmaea* are probably the prettiest of all Caraganas. Its habit is graceful, and it blossoms with great profusion, the flowers hanging thickly from the under side of the branch in a long row, three or four to the inch. It blossoms in May and June and can be easily propagated by late summer cuttings." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 288.*)

40158. CARAGANA FRUTEX (L.) Koch.

"A deciduous shrub up to 10 feet in height, with long, often erect, supple branches, not much divided except near the ends. Leaves composed of two pairs of leaflets, which are attached near the end of the common stalk, being themselves stalkless; they are obovate, rounded at the end, one-half to over 1 inch long, smooth, dull green. Flowers bright yellow, three-fourths to 1 inch long, produced singly on a stalk somewhat shorter than itself. Calyx one-third inch long, bell shaped, smooth. Pod 1½ inches long, one-eighth inch wide,

40139 to 40201—Continued.

cylindrical, smooth. In a wild state this species extends from the south of Russia to Japan. It was introduced in 1752. It is a pretty shrub in flower, and is often quite neat and graceful in habit, especially when 3 or 4 feet high, with its numerous thin twigs, rather pendulous. It is distinct in being unarmed and without down." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 290.*)

40159. CARMICHAELIA FLAGELLIFORMIS Colenso. Fabaceæ.

"A deciduous or often leafless shrub, 4 or 5 feet high, with numerous erect-growing, slender, grooved branches, flattened or convex when young, round when old. Leaves very small and inconspicuous, consisting of three or five tiny leaflets, which are somewhat larger in young plants than in old ones. Flowers purplish lilac, pea shaped, produced in axillary downy racemes; there are from one to three racemes at each joint of the twigs and from three to seven flowers in each raceme, the whole forming a short, dense cluster. The flowers, although small, about one-eighth inch long, are borne in extraordinary profusion. Pod one-fourth to one-half inch long, nearly as wide, ending in a stout-pointed beak, and containing usually two seeds. Native of New Zealand, long grown at Kew in a greenhouse, and for the last 20 years unprotected in the open ground, where, although slightly injured at the younger parts in severe winters, it is on the whole quite hardy and produces both flowers and seeds in abundance. It is not very showy or ornamental, but its flat, erect branches give it a quaint and unusual aspect. These green shoots perform the usual functions of leaves. It is not so attractive a plant as its ally, *Notospartium carmichaeliae*, but is hardier. The Notospartium differs in its stouter twigs and more pendulous habit, in its larger pink flowers, and in the longer, narrower, jointed pod containing more seeds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 292.*)

40160 and 40161. CHAENOMELES spp. Malaceæ. **Quince.**

40160. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehd.

"A deciduous shrub of open habit, sparsely branched and more or less thorny. The branches are tortuous, furnished with spiny spurs several inches long. Leaves short stalked, lanceolate, 3 to 5 inches long, finely toothed, pointed, tapering at the base; smooth above, reddish downy beneath. On the young growths of the year the stipules are large, broad, and leaflike, oblique, 1 inch long, toothed. On year-old shoots the leaves are in tufts springing from the axil of a spine; stipules small. Flowers two or three together in short clusters; each flower 1½ inches in diameter; petals white, round, overlapping; calyx ciliate. Stamens numerous, shorter than the petals. Fruit very large and heavy, 4 to 6 inches long, 2½ to 3½ inches wide; somewhat egg shaped, but abruptly contracted near the base. Seed three-eighths inch long, wedge shaped, pointed at one end. Although this quince is probably a native of China, nothing appears to be definitely known of its habitat. Henry collected it in the Province of Hupeh, China, but never undoubtedly wild. It has long been grown at Kew, and by Canon Ellacombe at Bitton, but its introduction is unrecorded. It is perfectly hardy and bears fruit freely, but this does not ripen always out of doors. Although not in any way showy, its habit is quaint, and the huge fruits stuck close

40139 to 40201—Continued.

to the branches have a curious and interesting appearance. Increased by seeds." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 452,* under *Cydonia cathayensis.*)

40161. CHAENOMELES JAPONICA (Thunb.) Lindley. **Dwarf quince.**

"A low, spreading, deciduous thorny shrub, usually under 3 feet in height, considerably more in width; branchlets very downy when young. Leaves 1 to 2 inches long, obovate or oval to almost orbicular, toothed, tapering at the base to a short stalk, quite smooth; stipules large on the young growing shoots, ovate or broadly heart shaped, one-fourth to three-fourths inch wide. Flowers in almost stalkless clusters from the joints of the year-old wood, very abundant, orange-red, scarlet or blood red, 1½ inches across. Fruit apple shaped, 1½ inches in diameter, yellow, stained with red on the sunny side, fragrant. Native of Japan; introduced about 1869 by Messrs. Maule, of Bristol. This is one of the most charming of red-flowered dwarf shrubs, flowering from April to June, and when at its best, literally wreathing its branches with blossom. It bears fruits freely, and they are pleasantly colored and scented in early winter; though harsh and acid when raw, they make an excellent conserve. Besides its dwarfer habit, it differs from its near ally, *C. japonica* [*C. lagenaria*], in having more obovate or rounded leaves, minutely warted twigs, and more coarsely toothed leaves. (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 453,* under *Cydonia maulei.*)

40162 to 40175. COTONEASTER spp. Malaceæ. **Cotoneaster.**

40162. COTONEASTER AFFINIS BACILLARIS (Wall.) Schneider.

"A deciduous shrub, 15 or more feet high, said to be found also as a small tree, of very graceful habit. Branches arching and often pendulous toward the end, the whole forming a wide-spreading mass more in diameter than in height; twigs smooth, or slightly downy. Leaves 1 to 3 inches long, one-third to half as wide, of variable shape, usually oval, ovate, or slightly obovate, pointed, smooth or becoming so; stalk one-fourth to one-half inch long. Flowers white, one-third inch across, borne numerously in cymose clusters, 1 to 2 inches across, at the end of short axillary branches. Fruit roundish, one-fourth inch or less in diameter, purplish brown or nearly black. Native of the Himalayas up to 10,000 feet. This is one of the most useful of cotoneasters, and one of the most graceful. It has been largely planted on the margins of the island of the lake at Kew, where the branches overhang the water and have the elegance of a willow, with the added attractions of abundant flowers and fruits. As a flowering shrub, this is one of the prettiest in the genus, but its fruits have not the bright color that gives to many cotoneasters their greatest charm. The wood is strong and elastic, and is valued in its native regions for making walking sticks and spear shafts. The species is variable in the shape and amount of down on the leaves, and no clear line can be drawn between it and *C. affinis,* which has woolly leaves. (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40163. COTONEASTER DAMMERI Schneider.

"A prostrate, evergreen shrub, with slender creeping stems keeping close to the ground; young wood downy. Leaves obovate or

40139 to 40201—Continued.

oval, three-fourths to 1¼ inches long, one-fourth to five-eighths inch wide; margins incurved, apex usually rounded, downy on the lower surface when young, ultimately quite smooth on both sides; stalk one-eighth to one-fourth inch long; veins in four to six pairs. Flowers solitary, occasionally in pairs, on downy stalks one-fourth inch long, pure white, one-third to one-half inch in diameter; calyx downy, with broad triangular lobes. Fruit coral red, globose, or rather top shaped, one-fourth inch wide. Native of central China; found by Henry near Ichang, and introduced in 1900 by Wilson from western Hupeh, where it occurs at 5,000 to 7,000 feet altitude. It is quite hardy and is very distinct among cotoneasters for its perfectly prostrate habit. Its fruits are brightly colored, and the plant will no doubt prove useful as an evergreen carpet shrub; also for covering sunny slopes, as it is very vigorous. It occurs wild on heaths and rocky ground." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

40164. COTONEASTER DIVARICATA Rehd. and Wilson.

"A deciduous shrub up to 6 feet high, of spreading habit; young shoots clothed with grayish hairs, becoming the second year smooth and reddish brown. Leaves roundish oval, sometimes ovate or obovate, tapered abruptly toward both ends, the apex mucronate; one-third to 1 inch long, one-fourth to five-eighths inch wide, smaller on the flowering shoots; dark glossy green, and soon smooth above, sparsely hairy beneath; veins in three or four pairs; leafstalk one-twelfth inch or less long. Flowers usually in threes at the end of short twigs, often supplemented by solitary ones in the axils of the terminal leaves, rosy white; calyx lobes triangular; they and the tube loosely woolly. Fruit red, egg shaped, one-third inch long, carrying two stones. Native of western Hupeh and western Szechwan, China; first found by Henry in the latter Province about 1887; introduced to the Coombe Wood nursery by Wilson in 1904. It is one of the handsomest in fruit of Chinese cotoneasters and was given a first-class certificate by the R. H. Society in the autumn of 1912. It is allied to the Himalayan *C. simonsii.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40165. COTONEASTER FOVEOLATA Rehd. and Wilson.

"A deciduous shrub, 10 to 20 feet high; young shoots covered with yellowish gray, bristly hairs, becoming smooth and grayish the second year. Leaves oval to ovate, slender pointed, usually wedge shaped, sometimes rounder at the base; 1½ to 4 inches long, three-fourths to 1¾ inches wide; dull green and soon smooth above, sparsely hairy beneath, more so on the midrib and veins; margins downy, veins in 3 to 6 pairs, the blade often puckered between them; stalk woolly, one-sixth inch or less in length. Corymbs three to seven flowered, on a stalk about one-half inch long, and hairy, like the young wood; flowers one-third inch wide; petals rose-tinted white; calyx tube woolly, the lobes triangular and woolly only on the margins. Fruit red, finally black, roundish, one-fourth to one-third inch wide, carrying usually three or four stones. Native of western Hupeh, China; introduced by Wilson in 1908. It has not flowered under cultivation but is growing vigorously." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40139 to 40201—Continued.

40166. COTONEASTER FRANCHETI Bois.

"An evergreen shrub, 8 to 10 feet high, with slender, gracefully arching branches, which the first year are covered with a dense, pale brown wool. Leaves oval, tapering toward both ends, from three-fourths to 1¼ inches long, about half as wide, pointed; upper surface rather hairy when young, lustrous green later, lower surface covered with a thick, whitish, afterwards pale-brown felt; stalk one-eighth inch or less long. Flowers borne in corymbs of 5 to 15 flowers, terminating short, lateral, leafy twigs; petals erect, white, touched with rose on the outside; calyx felted like the under surface of the leaves. Fruit oblong, one-fourth to one-third inch long; orange scarlet. Native of Tibet and western China; first raised in France about 1895, by Mr. Maurice de Vilmorin, from seed sent by the Abbé Soulié. It is a shrub of very elegant growth, whose fruits are freely borne, but lose in brilliancy by the grayish down, more or less dense, which covers them. It was first confused with *C. pannosa;* the distinguishing characters may be defined as follows: Leaves rather longer than in *pannosa*, but with stalks scarcely half as long, the upper surface somewhat lustrous; flowers not so numerous in each cluster, petals erect and rose tinted; fruits larger, longer, and not of so deep a red. It flowers in May, and the fruit is ripe in October." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 409.*)

40167. COTONEASTER HENRYANA (Schneid.) Rehd. and Wilson.

"An evergreen shrub, 10 to 12 feet high, of sparse habit; the branches gracefully pendulous; young shoots hairy, becoming the second year smooth, and of a dark purplish brown. Leaves 2 to 4½ inches long, about one-third as wide, narrowly oval or obovate, finely pointed, dark green, and somewhat rough to the touch above; covered beneath when young with a grayish wool which mostly falls away by the second season, that which remains becoming brown and confined to the midrib and veins, the under surface still remaining brownish white; veins in 9 to 12 pairs; stalk one-fourth to one-half inch long, hairy. Flowers white, produced about the middle of June in corymbs 2 to 2½ inches across, terminating leafy twigs less than 1 inch long, that spring from the axils of the still-persisting leaves of the previous year; stamens 20, with purple anthers; calyx and flower stalks hairy. Fruit brownish crimson, egg shaped, one-fourth inch long. Native of central China; introduced by Wilson in 1901. A handsome and distinct evergreen, and probably the largest leaved of cotoneasters with persistent leaves. Allied to *C. salicifolia.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 410.*)

40168. COTONEASTER MULTIFLORA Bunge.

"A deciduous shrub or small tree, 10 to 12 feet high; branches slender, pendulous, or arching, and smooth except when quite young. Leaves thin in texture, varying in shape from ovate and oval to roundish, three-fourths to 2½ inches long, one-half to 1½ inches wide; usually blunt or rounded at the end; hairy when quite young, but soon becoming smooth above; pale and often smooth, never permanently woolly beneath; stalk one-fourth to one-half inch long. Flowers white, produced in branching clusters of 3 to 12 or more, not pleasantly scented. Fruit round or pear shaped, red. Native of

40139 to 40201—Continued.

Soongaria and other parts of the northwestern borders of China; introduced in 1837. This is one of the most elegant of cotoneasters. There is a specimen at Kew with a single well-formed trunk supporting a crown of pendulous or arching branches; the whole 10 to 12 feet high. When the branches are wreathed with the abundant blossom in May and June, this tree makes a most charming picture. The same or a closely allied shrub has recently been introduced by Wilson from western China, but 1,500 or more miles to the southwest of the first habitat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 413.*)

40169. COTONEASTER PANNOSA Franchet.

"An evergreen shrub of free and elegant habit, 10 feet or more high; branches arching and slender, covered with whitish felt when young. Leaves oval, tapering toward both ends, one-half to 1 inch long, about half as wide; always dull green above, covered with whitish felt beneath; stalk up to one-fourth inch long. Flowers one-fourth to three-eighths inch across, borne in corymbs of as many as 15 or 20; petals white, spreading; calyx woolly. Fruits scarcely one-fourth inch long, dull red. Native of Yunnan, China, up to 9,000 feet altitude; raised in Paris in 1888, from seed sent there by the Abbé Delavay. Introduced to Kew in 1892. The differences between this species and *C. francheti* [S. P. I. No. 40166] have already been alluded to under that species. Both are characterized by extreme elegance of habit and by being very woolly on young bark, flower stalk, calyx, and under surface of leaves; but *C. pannosa* has duller leaves, is less hairy, when young, on the upper surface, more spreading whiter petals, and shorter, rounder fruits of a deeper red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40170. COTONEASTER RACEMIFLORA (Desf.) Koch.

"A deciduous shrub up to 6 or 8 feet high, with slender branches, gray felted when young, becoming smooth and reddish brown later. Leaves oval or ovate, sometimes roundish, tapering toward the base, one-half to 1¼ inches in length, dark green and ultimately smooth above; gray felted beneath. Flowers white, in clusters of 4 to 12 or more on felted stalks. Fruit roundish, bright red. Native of southeastern Europe, Asia Minor, etc. Its identity has been much obscured, owing to a confusion with *C. lindleyi*, a taller, more robust shrub with much larger leaves and black fruits, also known as *C. nummularia.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40171. COTONEASTER DIELSIANA Pritzel.

"A deciduous shrub, 8 feet, perhaps more, high, with long, extremely slender, arching or quite pendulous branches; branchlets downy when young. Leaves one-half to 1½ inches long, three-eighths to 1 inch wide, ovate; hairy above when young, covered beneath with felt, at first white, afterwards pale brown; veins prominent. Flowers three to seven in a cluster, terminating side shoots 1 inch or so long; calyx and flower stalk hairy, calyx lobes shallowly triangular. Fruit scarlet, round or rather pear shaped; one-quarter inch long. Native of central China; introduced for Messrs. Veitch by Wilson in

40139 to 40201—Continued.

1900. It flowers in June, and the fruit is in full color in September and October; it is then one of the most effective of cotoneasters. The habit is singularly graceful, the long whiplike shoots spreading outward and downward in every direction. The name *applanata* refers to the distichous arrangement of the branches of young plants, which gives them the appearance of a well-trained tree." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408,* under *C. applanata.*)

40172. COTONEASTER ACUTIFOLIA VILLOSULA Rehd. and Wilson.

"A deciduous shrub of bushy habit, 5 to 7 feet high, branches often pendulous; young twigs downy. Leaves pointed, ovate-lanceolate to oval, 1 to 2½ inches long, half as wide; dull green, and with scattered hairs above, paler and hairy beneath, especially when young; veins in five or six pairs; stalk one-twelfth to one-eighth inch long. Flowers white, three or more together in corymbs; stalks and calyx woolly, lobes of calyx triangular. Fruit reddish at first, finally black, one-third inch in diameter, smooth. Native of northern and western China. This is not one of the handsomest of cotoneasters and is, perhaps, a poor form of *C. lucida.* There has been much confusion between the two, owing to *C. lucida* also having been called *C. acutifolia,* but from that species the present one is distinguished by its dull green, not shining, more hairy leaves, and its woolly calyx and flower stalks. Var. *villosula* has young shoots clothed with yellowish gray loose hairs, becoming smooth and purplish brown the second year. Leaves 1½ to 4½ inches long, one-half to 2¼ inches wide, larger and more drawn out at the apex than in the type. Petals rose-tinted white. Fruit roundish pear shaped, two-fifths inch long, woolly, ultimately shining black. Native of western Hupeh; introduced by Wilson in 1900. A very vigorous shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 405.*)

40173. COTONEASTER AFFINIS Lindley.

"The identity of this species is somewhat confused, but what is usually grown under the name is an ally of *C. bacillaris* and *C. frigida.* It has the woolly young leaves, young wood, and flower stalks of the latter, but the purplish brown fruit of *C. bacillaris.* It is a shrub 10 to 15 feet high and deciduous. Leaves oval, acute, or bluntish at the apex, up to 3½ inches long. Native of the Himalayas; introduced in 1828." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40174. COTONEASTER AMOENA Wilson.

"A densely branched, stiff-habited evergreen bush of spreading habit, 3 to 5 feet high; young shoots slender but rigid, felted with gray wool. Leaves oval or ovate, tapered about equally to both ends, terminated by a fine point; one-third to three-fourths inch long, one-fourth to two-fifths inch wide; glossy green and with loose hairs above, clothed beneath with a thick, grayish wool; veins in 2 to 4 pairs; stalks one-twelfth to one-eighth inch long. Flowers white, one-fifth inch wide, borne in 6 to 10 flowered corymbs; petals roundish; stamens 20; calyx woolly, with triangular-ovate teeth. Fruit bright red, roundish obovoid, broadest above the middle, one-fourth inch long, packed in umbellike clusters at the end of

40139 to 40201—Continued.

short twigs that have sprung from the growths of the previous year. Native of Yunnan, China; introduced by Wilson about 1904 to the Coombe Wood nursery. It is most closely allied to *C. francheti* among older species, but is dwarfer and stiffer in habit, the leaves smaller, the berries a richer red, especially on the exposed side." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 406.*)

40175. COTONEASTER ZABELI Schneider.

"A deciduous shrub, 6 to 9 feet high; young shoots covered with loose grayish hairs, becoming smooth the second year and dark brown. Leaves one-half to 1½ inches long, half to two-thirds as wide; variable in shape, but usually oval or ovate, mostly blunt to rounded at the apex; but sometimes pointed, the base rounded to truncate; dark dull green above, with loose, appressed hairs, clothed beneath with yellowish gray felt; stalk one-eighth inch long, felted. Flowers in clusters of 4 to 10, small, rose colored; stamens 20; flower stalk and calyx felted. Fruit red, roundish, pear shaped, downy, one-third inch long. Native of western Hupeh, China; introduced in 1907 by Wilson, who described it as the common cotoneaster of the thickets of western Hupeh. It is allied to *integerrima* and *tomentosa;* from the former it differs in its felted calyx, and from both in the more numerously flowered inflorescences." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 416.*)

40176. COROKIA BUDDLEIOIDES Cunningham. Cornaceæ.

"A small tree, with long, narrow leaves, shining above and downy beneath. Flowers in slender panicles. Corolla one-fourth inch long, yellow. Drupe, orange-red. North Island: Mangonui to East Cape. Flowers December. Native name *Korokia-taranga.*" (*Laing and Blackwell, Plants of New Zealand.*)

40177. DEUTZIA LONGIFOLIA Franchet. Hydrangeaceæ.

See S. P. I. Nos. 34533 and 34600 for previous introductions and description.

"A deciduous shrub 4 to 6 feet high; young shoots sparsely scurfy; afterwards smooth, bright brown, peeling. Leaves narrowly oval lanceolate, rounded or tapered at the base, slender pointed, finely toothed; 1½ to 5 inches long, one-fourth to one-half inch wide, upper surface dull grayish green, sprinkled with pale, flat, usually 5 or 6 rayed, stellate hairs; under surface grayish white, covered with a close feltlike layer of many-rayed stellate scales, the midrib and chief veins furnished on each side with few to many white simple hairs. Flowers in corymbose panicles, 2 to 3 inches long and wide, produced in June at the end of short 2 to 6 leaved twigs; each flower is about 1 inch across, rich purplish rose, paling at the margins of the petals. The wings of the inner stamens are deeply bilobed at the top, the anthers set in the notch; calyx lobes linear oblong, persistent, covered like the calyx tube and flower stalks with pale, starry scurf. Fruit one-fourth inch across. Native of western China; introduced by Wilson in 1905. This is one of the finest of the Chinese Deutzias, both in size of flower and richness of tint. It is closely allied to *D. discolor*, but is distinguished by the longer, narrower leaves, more distinctly veined beneath, and especially

40139 to 40201—Continued.

by the simple hairs along the midrib—absent in *discolor;* the wings of the inner stamens are deeply bilobed in *discolor*, but the lobes do not reach up to or above the anther, as in *longifolia.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 483.*)

40178. DIPELTA VENTRICOSA Hemsl. Caprifoliaceæ.

"A deciduous shrub, 6 to 15 feet high; young shoots downy. Leaves oval or ovate-lanceolate, rounded at the base, the apex long and taper pointed, edged with a few gland-tipped teeth, sometimes quite entire; 2 to 6 inches long, three-fourths to 1¾ inches wide; downy on the margins and slightly so on both surfaces; stalks one-eighth to one-third inch long. Flowers produced at the end and in the leaf axils of short side shoots; usually they are solitary in the leaf axil and in a terminal corymb of three. Corolla between tubular and pitcher shaped; 1 to 1¼ inches long, and three-fourths inch wide at the mouth; the tube protruded on one side near the base; 5-lobed, the lobes rounded, and the two upper ones the smaller; deep rose outside, paler within, except in the throat, which is orange colored. Calyx with five awl-shaped lobes, one-third inch long, fringed with short hairs. Flower stalk slender and furnished with several bracts at the base of each flower. These bracts, the largest two-thirds inch long, one-third inch wide, are persistent and become attached to the fruit, which is also covered by the persistent calyx. Distinct from *Dipelta floribunda* in the smaller bellied corolla. Native of western China; discovered and introduced by Wilson in 1904; flowered in the Coombe Wood nursery in May, 1908. It thrives very well, and promises to be an ornamental as well as interesting shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 497.*)

40179 and 40180. EUONYMUS spp. Celastraceæ.

40179. EUONYMUS PLANIPES Koehne.

"A deciduous shrub or small tree, closely allied to *E. latifolius*, and of similar habit and dimensions. The leaves are like those of that species in most respects, but are more coarsely toothed, and the stalk is not channeled on the upper side. The fruit is rosy red and 5-lobed, as in *E. latifolius*, but differs in having the top conical; nor are the wings of each lobe flattened and knifelike as in *E. latifolius.* Except in these respects the two differ but little. Native of Japan; introduced to Kew from the Arnold Arboretum in 1895, as *E. macropterus*; it has borne fruit for several years past, and promises to be as handsome as *latifolius.*" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 541.*)

40180. EUONYMUS YEDOENSIS Koehne.

"A deciduous shrub or small tree, of sturdy, flat-topped habit, growing 10 feet or more high; branches stiff; young shoots smooth. Leaves obovate, usually broadly so, sometimes oval, tapered at both ends, but more abruptly at the apex, minutely toothed; 2 to 5 inches long, 1½ to 3 inches wide, smooth, strongly veined beneath; leaf stalk one-third to five-eighths inch long. Flowers with styles of varying length. Fruit pinkish purple, about the size of those of *E. europaeus*; seeds with an orange-colored coat, but not much exposed. Native of Japan; named by Prof. Koehne in 1904. It is

40139 to 40201—Continued.

allied to *E. europaeus*, but is distinguished by the brown-purple anthers. I have not seen it in flower, but there is a fine bush in the vicarage garden at Bitton, near Bristol, where its leaves turn a brilliant red in early autumn." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 543–544.*)

40181. HELIANTHEMUM FORMOSUM (Curt.) Dunal. Cistaceæ.

"A low shrub with wide-spreading branches, growing 2 to 3 feet high, but more in width, the young shoots erect, the whole plant gray with short down, intermixed with which are numerous whitish, stellate, or long simple hairs. Leaves oblong, oval, or obovate; one-half to 1½ inches long, one-fourth to one-half inch wide; 3-nerved at the narrowed base, the apex rounded or abruptly pointed. Flowers borne at the end of short side twigs, clustered, but appearing successively; each flower is 1½ inches in diameter, bright rich yellow, each petal with a conspicuous brownish purple blotch near, but not reaching to, the base. Sepals three, ovate, taper pointed, very hairy. Native of central and south Portugal; introduced in 1780; perhaps the most beautiful of all the sun roses we cultivate. It is perfectly hardy, and I have never seen it permanently injured by frost, even 30° to 32°. It is admirable for covering a dry, sunny bank, and remains well furnished with foliage through the winter. It commences to flower in May." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 612.*)

40182. HYDRANGEA BRETSCHNEIDERI Dippel. Hydrangeaceæ.

See S. P. I. No. 38812 for previous introduction and description.

"A deciduous shrub, 8 to 10 feet high, forming a sturdy bush, old bark peeling; young branches smooth. Leaves oblong to ovate, 3 to 5 inches long, 1 to 2¼ inches wide; rounded or wedge shaped at the base, slender pointed, regularly toothed; dull and smooth above, hairy on the veins and sometimes over the whole surface beneath. Corymbs flattened, 4 to 6 inches across, with a considerable number of large sterile flowers at the margins; these are three-fourths to 1¼ inches across, the three or four sepals rounded or obovate, white, afterwards rosy. The small, perfect flowers are dull white; flower stalks clothed with erect bristly down. The seed vessels are egg shaped, the persistent calyx forming a raised band round the middle. Native of China; introduced from the mountains about Peking, in 1882, by Dr. Bretschneider. Planted in a sunny position in good soil, it makes a really handsome shrub, flowering in June and July, perfectly hardy and always vigorous." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 624.*)

40183. INDIGOFERA GERARDIANA Wallich. Fabaceæ.

"A deciduous shrub with downy, slightly ribbed branches. At Kew, where it is almost invariably cut back to the ground each winter, it sends up a dense thicket of erect, scarcely branched shoots, 2 to 4 feet high, clothed from top to bottom with leaves. Where the climate is milder the shoots survive, and it then becomes a much-branched shrub, perhaps 6 or 8 feet high. On a wall at Kew it is 10 feet high. Leaves pinnate, 2 to 4 inches long, composed of 6 to 10 pairs of leaflets and an odd one; leaflets three-eighths to five-eighths inch long, obovate or oval, clothed with gray appressed hairs on both sides, the apex notched or rounded and having a short, bristlelike tip. Racemes produced from the leaf axils in succession from below upward, on the terminal part of the shoot. They

40139 to 40201—Continued.

are 3 to 5 inches long, bearing short-stalked, pea-shaped flowers one-half inch long, rosy purple, two dozen or more on each raceme. Calyx downy, with lance-shaped lobes. Pod deflexed when ripe, 1½ to 2 inches long, one-eighth inch wide, cylindric, 6 to 10 seeded. Native of the northwestern Himalayas. Commencing to blossom about the end of June and continuing until the end of September, having also foliage of great beauty and luxuriance, this is one of the most ornamental of late-flowering shrubs. It has the disadvantage of starting late into growth, and it is not until June that the stools become well furnished. For this reason it is not suitable for planting alone in masses. It likes abundant sunshine, and does not flower so freely in dull seasons." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 655.*)

Distribution.—Temperate and subtropical slopes of the western Himalayas from the Salt Range to Kumaon, in India, and west to Afghanistan.

40184 to 40187. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

40184. LONICERA ORIENTALIS LONGIFOLIA Dippel.
(*Lonicera kesselringi* Regel.)

"It has oblong or oval-lanceolate leaves 1½ to 2½ inches long, rarely more than three-fourths inch wide. Flowers pink, smaller than in *orientalis*, the corolla tube only slightly swollen, stalk one-third inch long. Introduced from Kamchatka in 1888." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 51.*)

40185. LONICERA TRICHOSANTHA Bureau and Franchet.

"A deciduous bush, of vigorous growth and rounded, dense, leafy habit, probably 8 feet or more high, the whole plant with a pale grayish aspect; young shoots at first downy, becoming smooth later in the season. Leaves oval, often inclined to obovate, rounded or broadly wedge shaped at the base and short pointed or rounded at the apex, 1 to 2 inches long, one-half to 1¼ inches wide; dull gray-green above, paler beneath, both sides at first downy, becoming almost smooth, especially above; stalk one-eighth to one-fourth inch long. Flowers pale yellow, fading to a deeper shade; corolla one-half to three-fourths inch long, hairy outside. Calyx bell shaped, but split into two parts. Berries red. Native of Szechwan, China; discovered by the Russian traveler Potanin. Introduced in quantity by Wilson about 1908. A robust species of the same class as *deflexicalyx* and *quinquelocularis*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 59.*)

40186. LONICERA DEFLEXICALYX Batalin.

"A deciduous shrub of elegant spreading habit; branches often horizontal or drooping, the branchlets in opposite rows; young shoots purple, downy. Leaves 1½ to 3 inches long, scarcely half as wide, rounded at the base, narrowly ovate, pointed, dull green and downy above; grayish and hairy beneath, especially when young; stalk one-third inch long. Flowers in pairs from each axil along the branchlets, all expanding upwards; corolla yellow, five-eighths inch long, downy outside, the lower lip much deflexed, tube shorter than the lobes; stamens hairy at the base; style wholly hairy; stalk one-fourth inch long; fruit orange-red. Native of China and Tibet;

40139 to 40201—Continued.

introduced in 1904. A strikingly elegant, free-growing shrub, very hardy and floriferous, showing its flowers to good advantage by producing them on the upper side of the long, feathered branches. It flowers in May and June, and grows probably 8 feet or so high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 41.*)

40187. LONICERA QUINQUELOCULARIS TRANSLUCENS (Carr.) Zabel.

"This is very closely allied to and perhaps only a form of *L. quinquelocularis*. The leaves are longer pointed, more markedly ciliate, and the upper surface rougher than in *quinquelocularis;* the corolla tube also is shorter and more protuberant on one side. A sturdy bush, 10 feet high, that flowers freely." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 54.*)

40188. PICRASMA QUASSIOIDES (Don) Bennett. Simaroubaceæ.

"*Picrasma ailanthoides* Planchon. A slender, deciduous tree, 20 to 40 feet high, with very handsome young bark of a reddish brown, conspicuously marked with yellow spots. Leaves pinnate, 10 to 15 inches long, glabrous, consisting of 9 to 13 leaflets, which are glossy green, 1 to 4 inches long, ovate, unequal at the base, round or pointed at the apex, sharp toothed at the margin, and with a very short stalk. Flowers green, one-third inch across, in a lax, branching corymb 6 to 8 inches long, and often nearly as wide; stalks downy. Fruit a berry, about the size of a pea, rather obovoid, with the calyx still attached. This tree, according to some authorities, is a form of *P. quassioides*, a species which, in that sense, is spread in a wild state from Japan and China through the Himalayas as far south as Java. This is, no doubt, extending the specific limits of *P. quassioides* too far. No tree from Java would be as perfectly hardy in our climate as is this. The above description is based on trees growing at Kew which were introduced from Japan in 1890. They have flowered and borne fruit several times, and young plants have been raised from the seed. They have no beauty of flower or fruit, but of the foliage in autumn Sargent observes, 'few Japanese plants I saw are as beautiful as this small tree.' The leaves turn first orange, then scarlet. The whole tree is permeated by a singularly bitter principle. Its nearest ally among hard trees is Ailanthus." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 165.*)

40189 and 40190. PRUNUS spp. Amygdalaceæ.

40189. PRUNUS MAXIMOWICZII Rupr.

"A deciduous tree, up to 20 or 30 feet high, with a slender trunk; branchlets downy, the down persisting through the first winter. Leaves ovate or oval, pointed at the apex, rounded at the base; 1½ to 3 inches long, three-fourths to 1¼ inches wide; doubly toothed, downy on the midrib and veins beneath and with scattered hairs above; stalk one-third to one-half inch long, downy. Flowers rather dull yellowish white, about five-eighths inch across, produced in mid-May on stalked racemes 2 to 3½ inches long, remarkable for the large leaflike bracts with which they are furnished; from 6 to 10 flowers occur on a raceme, each flower on a downy stalk one-half to three-fourths inch long; calyx hairy, with pointed, toothed lobes. Fruit globose, one-sixth inch wide, shining, at first red, then black; ripe in August. Native of Korea [Chosen], Manchuria, and

40139 to 40201—Continued.

Japan; introduced by Sargent to the United States in 1892 and by him sent to Kew in 1895. The tree is interesting and very distinct among cherries because of the conspicuous bracts on the inflorescence, which remain until the fruit is ripe; but neither in flower nor fruit is it particularly attractive, as cherries go. For its autumn coloring it may prove valuable, as it turns a brilliant scarlet both in Japan and North America. It is very hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 243.*)

40190. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehd.)

"A deciduous tree, 40 to 80 feet high, with a trunk sometimes 3 feet in diameter; young shoots smooth. Leaves obovate to oval, drawn out at the apex into a long, slender point; rounded; sometimes slightly heart shaped at the base, sharply toothed, 2 to 4 inches long, about half as wide; quite smooth on both surfaces, often reddish when young; stalk smooth, one-half to 1 inch long, with a pair of glands near the blade. Bracts red, oblong, one-half inch long, edged with small glandular teeth. Flowers 1¼ to 1½ inches across, of a lovely deep blush color, produced two to six together in short-stalked umbels, each flower with a stalk 1 to 1¼ inches long; petals obovate, notched at the broad apex; calyx tubular, with five ovate, pointed lobes one-fourth inch long, smooth and entire; stamens deep rose. Fruit a small black cherry, one-third inch wide. Native of Japan; introduced by Sargent to Kew in 1893. This splendid cherry, probably the finest of the true cherries as a timber tree, is also one of the most beautiful in its blossom. It flowers in April. In June, 1910, I saw the trees first introduced to America in the Arnold Arboretum; they were then laden with an extraordinary profusion of small black cherries. The seeds germinate freely after lying dormant a year." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 250.*)

"*Prunus sargentii* is a large, long-life tree of great vigor, perfectly hardy here in New England and, for these reasons alone, ought to be tried as stock for the flowering cherries of Japan, exclusive of *Prunus pendula*, *P. subhirtella*, and their forms.

"My studies in Japan have convinced me that the failure to succeed with Japanese cherries in western lands is due to their being worked on a stock which, though quick growing, is short lived and not suited to the rigors of such a climate as that of New England. I therefore turn to the Japanese species where vigor and hardiness are proved, *P. sargentii*.

"It has yet to be shown that the Japanese cherries will grow on this particular stock, but such evidence as I have accumulated is most encouraging, and I make bold to prophesy that fully 90 per cent will be found to thrive on *P. sargentii*, but they must be worked high enough to prevent them getting off on their own roots.

"*Prunus sargentii* and its varieties are found scattered in woods on the mountain sides throughout the length and breadth of Japan, but are nowhere very abundant. The type is found from the Nikko region northward. Both the type and its forms are commonly planted, and many fine avenues and groves occur in different parts

40139 to 40201—Continued.

of Japan—for example, at Yoshino near Nara, at Arashigama near Kyoto, Kogami near Tokyo, at Nikko and Chuzenji; at Noboribeten near Muroran, at Onumakoen near Hakodate, etc. The last two mentioned places are in Hokkaido [Hokushu]." (*E. H. Wilson, letter of April 11, 1915.*)

40191 to 40193. Rosa spp. Rosaceæ. **Rose.**

40191. Rosa webbiana Wallich.

"A graceful shrub of thin habit, 4 to 6 feet high, whose long, slender branches are armed with straight spines one-third to one-half inch long, often in pairs; stems often blue-white when young. Leaves 1 to 3 inches long, usually smooth, sometimes downy, composed of five to nine leaflets; common stalk with tiny prickles beneath. Leaflets obovate, broadly oval, or almost round, one-fourth to three-fourths inch long, toothed toward the end. Flowers 1½ to 2 inches across, pale pink, produced singly on short lateral twigs; flower stalks one-third to one-half inch long, smooth or slightly glandular; sepals about one-half inch long, lanceolate, terminating in a short tail, ciliate; calyx tube is more or less glandular. Fruit pitcher shaped, bright red, three-fourths inch long, apart from the persisting sepals with which it is crowned. Native of the Himalayas, at from 6,000 to 18,000 feet elevation. This delightful rose, so distinct in its thin, graceful habit, its pale yellowish prickles, its tiny leaves, and glaucous young stems, is also very pretty in June when covered with its blush-tinted flowers and in autumn when carrying its bright-red fruits. It can best be propagated by layering, also by seeds when the plant is sufficiently isolated to be safe against cross-fertilization, but is still very rare in cultivation. It has a recently introduced ally in *R. willmottiae*, from western China." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 447.*)

40192. Rosa hugonis Hemsl.

"A bush of rounded habit, 8 feet high and more in diameter; branches slender, sometimes gracefully arching, armed with straight, flattened spines of varying length, which are associated on the barren shoots with numerous bristles. Leaves 1 to 4 inches long, quite smooth. Leaflets 5 to 11, oval or obovate, one-fourth to three-fourths inch long; finely toothed, deep grass green. Flowers 2 inches across, bright yellow, solitary on short lateral twigs; flower stalk smooth, slender, three-fourths inch or less in length; calyx tube smooth, sepals one-half inch long, entire, downy inside. Fruit smooth, nearly round, one-half to five-eighths inch wide, black when ripe, the calyx persisting at the top. Native of western China; first raised at Kew in 1899, from seed sent to England by Father Hugh Scallan (Pater Hugo), a missionary in its native country. It is a most charming rose and the most vigorous of the yellow-flowered species, beautiful even when not in flower for its luxuriant, feathery masses of foliage. It shares with *R. sericea* the distinction of being the earliest of roses to flower, usually by mid-May. It is allied to the Scotch rose, but differs markedly in habit. It is perfectly hardy, free, but neat and not rampant in growth. The spines vary much in character and are often altogether absent from some portions of

40139 to 40201—Continued.

the shoots; the largest are thin, flattened, triangular, one-half inch long, reddish, and translucent." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 429.*)

40193. ROSA SERTATA Rolfe.

"A shrub of elegant habit, up to 5 feet, perhaps more, high; branches glaucous, graceful, and slender, armed with spines up to one-half inch long, in pairs or scattered. Leaves 2 to 4 inches long, composed of 7 to 11 leaflets, which are stalkless, oval to oblong, sharply toothed; one-third to three-quarters inch long, three-sixteenths to three-eighths inch wide; gray-green above, glaucous beneath; stipules edged with glandular hairs. Flowers few or solitary, on short twigs, 2 to 2½ inches across, flower stalk two-thirds to 1¼ inches long, glandular-hairy or smooth; petals broadly obcordate, delicate purplish rose; calyx lobes ovate-lanceolate, tapering to a long, narrow point, minutely downy, sometimes glandular downy, sometimes smooth; anthers deep yellow. Fruit deep red, egg shaped, three-quarters inch long, the sepals persisting at the top. Native of central China; introduced by Wilson in 1907 and flowered at Kew in June, 1910. It is an extremely elegant and pretty rose, allied to *R. webbiana* and *R. wilmottiae*. From the former of these it differs 'in its laxer habit, its few, slender, straight, stipulary thorns, and its more slender, beaked fruit.' (*Curtis's Botanical Magazine.*) *R. wilmottiae* is smaller in its leaves and flowers." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 443.*)

40194 and 40195. RUBUS spp. Rosaceæ.

40194. RUBUS GIRALDIANUS Focke.

"A vigorous deciduous shrub up to 8 or 10 feet high; its biennial stems much branched toward the summit, pendulous at the ends, covered with a vividly white, waxy covering, not downy, armed rather sparsely with broad-based spines. Leaves pinnate, consisting of usually nine leaflets, and from 5 to 8 inches long; the main stalk downy and armed with hooked spines. Leaflets 1½ to 2½ inches long, three-quarters to 1¼ inches wide, the terminal one the largest; ovate or rather diamond shaped; lateral ones oval-lanceolate; all unequally and rather coarsely toothed, slender pointed, smooth above, white beneath with a close felt. Inflorescence a terminal panicle; the flowers small and of little beauty, purple. Fruit black. Native of China; first found in the Province of Shensi by Giraldi, later in Szechwan by Wilson, who introduced it in 1907. Its claims to recognition in the garden are its remarkably white stems, which are as striking in this respect as those of *R. biflorus*, and its pendulous branches, which give a remarkable fountainlike aspect to the shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458.*)

40195. RUBUS OMEIENSIS Rolfe.

"A large, straggling shrub, with round stems, unarmed, but furnished with small, stellate hairs. Leaves of maplelike form, five or obscurely seven lobed, with a heart-shaped base; 3 to 7 inches long and as much wide; irregularly toothed, stellately downy beneath, less so above; stalk 2 to 3 inches long; stipules one-half to three-quarters inch long, cut up into deep, narrow segments. Panicles many

40139 to 40201—Continued.

flowered, terminal; flowers one-half inch across, with downy stalks; calyx downy, the lobes pointed, triangular; petals purple. Native of western China, and found on Mount Omi by Wilson, who introduced it for Messrs. Veitch, with whom it flowered in August, 1908. It grows up to 6,000 feet elevation and will probably be perfectly hardy. It makes growths 10 to 12 feet long in a season. The stipules are rather remarkable." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

40196. STRANVAESIA DAVIDIANA UNDULATA (Decne.) Rehder and Wilson. Malaceæ.

"A low, spreading evergreen shrub, or a tree over 20 feet high, with very downy young branchlets. Leaves leathery, oval-lanceolate, pointed, glossy green, 1½ to 3½ inches long, one-half to 1¼ inches wide; entire, downy only on the midrib and margins; stalk one-third to one-half inch long, downy. Flowers white, produced in June in terminal, hairy-stalked corymbs, 1½ to 2½ inches wide; each flower about one-half inch across; petals soon falling; calyx with five triangular lobes, silky hairy when young; stamens about 20. Fruit brilliant red, of the shape and size of common haws. Native of China; introduced by Wilson for Messrs. Veitch about 1901. Unlike the previous species, this appears to be quite hardy. It flowers with great freedom, but the blossoms last in beauty a very short time. Its great charm as a garden shrub is in its abundant crop of bright-red fruits. The leaves, as in Photinia, turn red sometimes before falling. The specific name refers to the frequently wavy margins of the leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 556,* as *S. undulata.*)

40197. TILIA EUCHLORA Koch. Tiliaceæ.

"A tree as yet about 40 feet high in this country, but probably considerably higher naturally, of graceful, often rather pendulous growth; young shoots smooth. Leaves roundish ovate, oblique and heart shaped at the base, with short, tapered points; 2 to 4 inches long, often more in young trees, and as much or more wide; rich glossy green and smooth above, pale green beneath and smooth, except for tufts of hairs in the axils of the veins; marginal teeth small, regular, and slender; stalk smooth, 1 to 2 inches long. Flowers produced in the latter half of July, three to seven together in cymes 2 to 4 inches long, yellowish white. Floral bract linear-oblong, or narrowly lance shaped, 2 to 3 inches long, one-fourth to five-eighths inch wide, smooth, shortly stalked. Fruit distinctly ovoid, tapered to a point, shaggy, with pale-brown wool, one-fourth to one-third inch long.

"Of doubtful origin; introduced about 1860. In some respects this is the most beautiful of the limes, on account of its bright-green large leaves and pleasing form. It is remarkably free from insect pests. In the summer of 1909, when not only limes but nearly every other tree and shrub was infested with aphides and other pests, I examined specimens of this lime at intervals during the summer and never found a single parasite on the leaves. Yet it is quite uncommon in this country. On the Continent, however, its qualities are better appreciated, and it is being much planted in streets. Its brilliantly glossy, rounded, nearly glabrous leaves and pendulous branches very well distinguish it. It has been suggested that it is a hybrid between *T. cordata* and the scarcely

40139 to 40201—Continued.

known *T. caucasica* found in the Caucasus." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 590.*)

40198 to 40201. VIBURNUM spp. Caprifoliaceæ.

40198. VIBURNUM LOBOPHYLLUM Graeb.

"A deciduous shrub, with young shoots smooth or soon becoming so, dark reddish brown when mature. Leaves ovate to roundish or broadly obovate, abruptly narrowed at the apex to a short point; mostly rounded, sometimes broadly wedge shaped at the base; coarsely toothed except toward the base; 1½ to 4 inches long, seven-eighths to 3¼ inches wide; smooth or downy only on the midrib and veins; veins in five to seven pairs; leafstalk one-fourth to 1 inch long. Corymbs 2 to 4 inches wide, with seven main branches, which, like the secondary ones, are minutely downy and glandular. Flowers white, one-fourth inch across, stamens longer than the corolla, anthers yellow. Fruit bright red, roundish, one-third inch long. Native of western China; introduced by Wilson in 1901, and again in 1907 and 1910. It belongs to the confusing group of red-fruited Asiatic Viburnums containing *wrightii, betulifolium, dilatatum,* etc." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 652.*)

40199. VIBURNUM HENRYI Hemsl.

"An erect, evergreen shrub, becoming 10 feet high, having a treelike habit; branchlets stiff, smooth. Leaves narrowly oval, oblong, or obovate; 2 to 5 inches long, 1 to 1¾ inches wide; shortly pointed, wedge shaped or rounded at the base, shallowly toothed, dark shining green above, paler beneath, smooth on both sides or slightly furnished with stellate down on the stalk and midrib; stalk slightly winged, one-half to three-fourths inch long. Panicles stiff, pyramidal, 2 to 4 inches wide at the base, and about as long; flowers perfect and uniform, white, one-fourth inch across, opening about midsummer. Fruits oval, one-third inch long, at first red, then black. Native of the Patung district of central China, discovered there by Henry in 1887; introduced by Wilson for Messrs. Veitch in 1901. It is distinct among hardy Viburnums through its long, narrowish, nearly or quite smooth leaves, its stiff, thin, erect habit, and especially its pyramidal panicles. At Coombe Wood it has proved quite hardy since its introduction. It was given a first-class certificate by the Royal Horticultural Society in September, 1910, for its beauty in fruit." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 649.*)

40200. VIBURNUM PHLEBOTRICHUM Sieb. and Zucc.

Viburnum phlebotrichum is very distinct from *V. wrightii* in the smaller, narrower, ovate to oblong, shorter stalked leaves, the more numerous, silky, whitish hairs on the veins beneath, the quite smooth and slender-stalked cymes, the purple calyx, and especially the very short stamens. Native of Japan. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 660.*)

40201. VIBURNUM RHYTIDOPHYLLUM Hemsl.

"An evergreen shrub, perhaps eventually 10 feet high and as much through; the stout branches thickly covered with starry down. Leaves ovate-oblong; 3 to 7½ inches long, 1 to 2½ inches wide; pointed

40139 to 40201—Continued.

or blunt at the apex, rounded or slightly heart shaped at the base; upper surface glossy, not downy, but deeply and conspicuously wrinkled; lower one gray with a thick felt of starry down; stalk one-half to 1¼ inches long. Flowers produced on large terminal umbellike trusses 4 to 8 inches across, which form into bud in the autumn and remain exposed all through the winter and until the blossoms expand the following May or June. They are a dull yellowish white, about one-fourth inch in diameter. Fruit oval, one-third inch long, at first red, then shining black. Native of central and western China; introduced by Wilson for Messrs. Veitch in 1900. This remarkable shrub is one of the most distinct and striking, not only of Viburnums, but of all the newer Chinese shrubs. It appears to be quite hardy, and flowers well in spite of the curious habit of forming its inflorescences and partially developing them in autumn. Its beauty is in its bold, wrinkled, shining leaves and red fruits. The flowers are dull and not particularly attractive. It was given a first-class certificate by the Royal Horticultural Society in September, 1907. During that month of the year its fruits are red." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 655.*)

40202. Sabicea sp. Rubiaceæ.

From Lusambo, Belgian Kongo, Africa. Presented by Mr. J. A. Stockwell. Received March 15, 1915.

"*Tomwamwe*, a fruit (berry) that grows in clusters on a vine which resembles very much the honeysuckle of the South. The berry is very fine flavored, somewhat resembling the strawberry, although not the equal of that fruit. It makes a beautiful jelly." (*Stockwell.*)

40203 to 40205.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist in charge, Lamao Experiment Station. Received March 15, 1915.

40203. Cucumis sativus L. Cucurbitaceæ. Cucumber.

"The *India* cucumber. Size, large, 22 to 30 cm. long, averaging 26 cm. in circumference; average weight 850 grams; form oblong, cross section more or less triangular; color brown, the surface cracking as the cucumber attains maturity, exposing the flesh and giving it the appearance of being reticulated; surface fairly smooth; flesh perhaps somewhat less tender than the standard cucumber of the Temperate Zone, nevertheless very good; seed abundant.

"The seed of this variety was presented to the Bureau of Agriculture by Mr. A. C. Hartless, superintendent of the Seharunpur Botanical Garden, United Provinces, India, in 1911, and was sown at the end of the rainy season the same year at the Lamao Experiment Station. From the seed saved another sowing was made in January, 1913, together with a large number of imported varieties of cucurbits of all classes. In this trial the *India* showed itself hardier and superior to all the cucurbits planted in the resistance to insect pests, which practically destroyed the rest, notwithstanding frequent application of arsenical sprays. The variety is of vigorous growth and a satisfactory yielder and is unques-

40139 to 40201—Continued.

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40139 to 40201—Continued.

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40203 to 40205—Continued.

tionably one of the best varieties adapted to local conditions, everything taken into consideration, that has been introduced into the Philippines.

"A large area has lately been planted to *India* at the Lamao Experiment Station with a view of producing seed for general distribution throughout the Philippines another year.

"India is the original home of the cucumber, and the variety under consideration seems to be an improvement upon the aboriginal form that is especially adapted to tropical conditions.

"According to Mr. Hartless, this cucumber is grown throughout India as a climber during the rainy season. Notwithstanding its extensive cultivation in India, it is a curious fact that this distinct cucumber variety has never received a variety name. Coincident to its wide dissemination throughout the Philippines it has therefore been considered expedient to christen the variety in order to distinguish it from other varieties, and it has been named *India* in honor of the ancestral home of the cucumber." (*Wester, The Philippine Agricultural Review, vol. 7, no. 2, Feb., 1914.*)

40204 and 40205. HIBISCUS SABDARIFFA L. Malvaceæ. **Roselle.**

40204. "*Temprano* roselle, 20 days earlier than other varieties." (*Wester.*)

"Plant of medium vigor and upright growth, branching profusely, rarely exceeding 1.25 meters in height; stems light red; leaves palmately 5-lobate with conspicuously narrow lobes; flowers normal; pollen golden brown; calyx of the same general form as the *Victor*, but smaller, average length 45 mm., width 25 mm., with epicalyx 39 mm. The variety is prolific, and the fruiting season is 20 days earlier than *Victor* and *Rico*.

"When the *Victor* fruited for the first time at Lamao in 1911 one plant was conspicuous for its earliness, and seed was saved from this plant and sown the following year. The early trait of the parent was transmitted to the progeny, and the earliest plant was again isolated and the seed sown in 1913. In harvesting the fruit and seed of the third generation the early habit and other characteristics that distinguish this new strain from its parent, the *Victor*, seem to be sufficiently well fixed to merit its recognition as a separate variety, and it has been named *Temprano* on account of its early habit.

"The *Temprano* is more subject to leaf-blight than any of the other varieties mentioned in this paper, and therefore, on account of its deficiency in vigor, it is not recommended for planting on a large scale. In fact, the *Temprano* is of more value in a subtropical than a tropical country, where early frosts at the approach of the cold season destroy the ordinary varieties before their fruiting season is over." (*Wester, The Philippine Agricultural Review, vol. 7, no. 6, June, 1914.*)

40205. "*Altissima.* Plant of upright habit, vigorous, attaining a height of 2.5, sometimes exceeding 3.5 meters, branching sparsely or not at all; leaf lobes narrow; flowers normal; pollen golden yellow; full-grown calyces 25 mm. long, 22 mm. wide, including epicalyx 27 mm.; calyx lobes thin and fibrous, and thickly covered with short, stiff bristles; seed pod almost totally filling cavity.

40203 to 40205—Continued.

"The above description applies to two varieties, seed of which was received by the Bureau of Agriculture from the Gold Coast, West Africa, in 1911, and which in some respects differ radically from all other forms examined by the writer. They differ from each other in that one kind belongs to the red type of roselle, while the other form is intermediate between the red and the green. They evidently have no economic value on the Gold Coast, for our correspondent forwarded the seed with the remark that it was an 'interesting plant.'

"Because of the fibrous and spiny character of the small calyces of the two forms belonging to *Altissima* they have no culinary value. However, their habit of growth is favorable to the production of long fiber, and according to Mr. M. M. Saleeby, chief of the fiber division of this bureau, the two forms of *Altissima* are far superior to jute and all other varieties of roselle (including four from India) in habit, growth, and yield. As yet, the fiber of the *Altissima* has not been carefully studied, but it is apparently suitable for all uses in which jute fiber is now employed. The commercial possibilities of the fiber of the *Altissima* are now being investigated by Mr. Saleeby; the results will be published in a future issue of the Review.

"In India roselle is grown chiefly for its fiber, and in a limited way it is considered as a food plant in the Old World Tropics, the equatorial belt of the Western Hemisphere, and Australia. According to Mr. W. E. Safford, Bureau of Plant Industry, United States Department of Agriculture, before the advent of artificial refrigeration the wealthy planters in certain parts of Mexico sent Indian runners to the snow-capped mountains in their neighborhood to bring down ice or snow for making roselle sherbet.

"It may be of interest to readers in foreign countries to know that roselle soda water, roselle sundaes, roselle sherbet, and roselle ice cream are now included among the other standard offerings of a similar character in some of the best restaurants and ice-cream parlors in Manila, and it is confidently believed that if the roselle products were advertised and featured in the United States it would be a question of only a short time when their real excellence would win for them general recognition; the culture of roselle would then become an industry of considerable importance among the minor crops of the Tropics and subtropics." (*Wester, The Philippine Agricultural Review, vol. 7, p. 268–269, 1914.*)

40206 and 40207. Malus spp. Malaceæ.

From Albano, Stockholm, Sweden. Presented by Dr. Veit Wittrock, director, Botanic Garden. Received March 16, 1915.

40206. Malus zumi (Mats.) Rehder. Crab apple.

"A small tree of pyramidal habit; young wood slightly downy. Leaves ovate or oblong; 1½ to 3½ inches long, three-fourths to 1½ inches wide; tapering or rounded at the base, smooth except when quite young; stalks about 1 inch long. Flowers pink in bud, becoming white after opening, 1 to 1¼ inches diameter, produced in clusters of four to seven; calyx lobes woolly, especially inside; flower stalks 1 to 1½ inches long. Fruit one-half inch diameter, globose, red.

40206 and 40207—Continued.

"Native of Japan; introduced to North America in 1892 by Sargent, and thence to Kew in 1905. It is one of the group of Japanese crabs to which *Pyrus toringo* and *P. sargenti* belong, distinguished by small fruits marked at the apex by the scar of the fallen calyx. It is said to be superior to *P. toringo* as a garden tree in the Arnold Arboretum, being covered there in May by a mass of flowers, and in autumn by 'attractive bright red fruits.' It differs from both its allies in its oblong leaves being only slightly or not at all lobed, and from *P. sargenti* in its wider flowers and less crowded petals. The fruits are larger than the pealike ones of *P. toringo*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 300.*)

40207. × MALUS KAIDO Dippel.

"Perhaps a hybrid between *spectabilis* and *ringo*. It has larger, more deeply colored flowers than the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 297.*)

40208. BERBERIS GLAUCESCENS St. Hilaire. Berberidaceæ. Barberry.

From Nancy, France. Presented by the director, Botanic Garden. Received March 15, 1915.

"A shrubby species with 3-parted spines one-fourth to two-thirds inch long, brownish yellow in color, leaves subsessile, about one-half to 1½ inches long and one-third to two-thirds inch broad, obovate oblong, obtuse, mucronulate, entire, glabrous, and glaucescent. Flowers globose, about the size of those of *Berberis vulgaris*, all parts very smooth. Found in the woods of the Province of Cisplatina near the border of old Lusitania near the city of Maldonado." (*Saint-Hilaire, Flora Brasiliae Meridionalis, vol. 1, p. 47, 1825.*)

40209 to 40211.

From Nanking, Kiangsu, China. Presented by Rev. Joseph Bailie, University of Nanking. Received March 24, 1915. Quoted notes by Mr. Bailie.

40209. CASTANEA sp. Fagaceæ. **Chestnut.**

"Scions from trees inside of the city of Nanking, and I am not quite sure that they ought not to be grafted before we can expect them to produce true. They are about the largest chestnuts we have in China."

40210. AMYGDALUS PERSICA PLATYCARPA (Decne.) Ricker. Amygdalaceæ. (*Prunus persica platycarpa* Bailey.) **Flat peach.**

"Scions of the *pien t'ao*, or 'flat peach;' early choice."

40211. PRUNUS sp. Amygdalaceæ. **Cherry.**

"Large red."

40212 to 40219.

From Kabul, Afghanistan. Presented by His Majesty Habibullah Khan, Ameer of Afghanistan, through Mr. A. C. Jewett. Received February 23, 1915. Quoted notes by Mr. Jewett, except as otherwise indicated.

40212 and 40213. AMYGDALUS COMMUNIS L. Amygdalaceæ. **Almond.**

"Paper-shell almonds."

40212 to 40219—Continued. (Quoted notes by Mr. A. C. Jewett.)

40214. ELAEAGNUS ANGUSTIFOLIA L. Elæagnaceæ. **Oleaster.**

"*Sinjid* from Kabul."

40215. MORUS ALBA L. Moraceæ. **Mulberry.**

"The dried mulberries form the principal food of the poor people of the mountain districts of Kohistan. In the valleys of Kohistan and around Kabul there are extensive orchards of this mulberry, all irrigated, and the yield seems to be heavy. There is a howl if you cut down a mulberry tree. When the mulberries are ripe, they sweep under the trees and let the fruit fall down and dry them, just as they do the plums in California. For eight months the people live entirely on these mulberries. They grind them and make a flour and mix it with ground almonds. My men come month after month with their shirts filled with them. They can carry in their shirts enough of these dried mulberries for five days' rations. These men are commandeered and they bring their food with them. They get no other food whatever; mulberries and water is the whole diet. They sit down on the rocks, and they lunch and dine on nothing but these dried mulberries."

40216. PINUS GERARDIANA Wallich. Pinaceæ. **Pine.**

"Pine nuts."

"A moderate-sized evergreen of the inner, dry, and arid northwest Himalayas, generally between 6,000 and 10,000 feet; mountains of northern Afghanistan and Kafiristan; also Hariab district at 7,000 to 11,000 feet." (*Gamble.*)

"The chief product of this species is the almondlike seed, contained in the cones. The cones ripen in October, are plucked before they open, and heated to make the scales expand. The seeds are then removed and are largely eaten by the natives and stored for winter use. In Kunawar they are said to form a staple food with the inhabitants. They are also exported to the plains from the hills of the Punjab, and large quantities are imported annually into India from Afghanistan. The wood is hard, durable, and very resinous, but rarely utilized, since the tree is so highly valued for its seeds." (*Watt, Commercial Products of India.*)

40217 and 40218. PISTACIA VERA L. Anacardiaceæ. **Pistache.**

"Laughing pistachio from Herat."

40219. PRUNUS ARMENIACA L. Amygdalaceæ. **Apricot.**

"Sun-dried apricots from Kandahar."

40220 and 40221. CYDONIA VEITCHII Trabut. Malaceæ. **Pyronia.**

From Algiers, Algeria. Presented by Dr. L. Trabut, Government botanist for Algeria. Received March 19, 1915.

"Different plants from those sent you in 1914, although coming from the same sowing. This is nearer to Pyrus than to Cydonia." (*Trabut.*)

40220. *Pyronia 538–A.* **40221.** *Pyronia 538–B.*

See Journal of Heredity, vol. 7, p. 416–419, September, 1916, for a discussion of these interesting hybrids.

40222. CITRUS BERGAMIA Risso. Rutaceæ. **Bergamot orange.**

From Bronte, Sicily. Presented by Mr. Charles Beek. Received March 25, 1915.

"The Bergamot orange grows all down the coast of Calabria from above Scilla to the end of the boot and is not cultivated in Sicily; it grows all along the seashore and is cultivated intensely, i. e., highly manured and watered with the greatest care." (*Beek.*)

40223 to 40235. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. **Plum.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Garden. Plants received March 20, 1915. Quoted notes by Mr. Hartless.

"Country varieties. This is a race of plums the origin of which has not yet been satisfactorily settled. By some botanists it is supposed to be a distinct species from either the Japanese or European plums. They are undoubtedly much more adapted for semitropical conditions than any other varieties. They can be cultivated with success either in the plains (of northern India especially) or on the hills. Some of them are very good indeed as a dessert, and all can be utilized in cooking and preserving. For general culture in the plains these are to be strongly recommended. In the vernacular they are generally known as *Alubokhara* and *Alucha*. The difference between the two is not very marked; but a practiced person can detect them. The former is much more free growing than the *Alucha*, and the fruits are slightly more oval in shape. No. 1 to No. 6 are the oldest known varieties. Nos. 7 to 14 are termed plums by the malis, but to others are generally classed as *Alubokharas*. They have been collected from various sources in northern India, and as they have distinguishing characters they have been named according to these. They all fruit freely on the plains, coming into fruit about the beginning of May and lasting for nearly two months."

40223. "No. 1. *Alubokhara*. Large. Later than No. 2 [S. P. I. No. 40224]. Good for dessert but not good for cooking."

40224. "No. 2. *Alubokhara*. Small. Earlier than No. 1 [S. P. I. No. 40223]."

40225. "No. 4. *Alucha*. Purple. One of the best in my opinion."

40226. "No. 5. *Alucha*. Red. The best of the *Aluchas*."

40227. "No. 6. *Alucha*. Yellow."

40228. "No. 7. *Alubokhara*. Dwarf early yellow. Good for dessert."

40229. "No. 8. *Alubokhara*. Early large red. Good for dessert."

40230. "No. 9. *Alubokhara*. Early round. Good for dessert."

40231. "No. 10. *Alubokhara*. Kabul Greengage. Is one of the best."

40232. "No. 11. *Alubokhara*. From Ladak. Is better for cooking."

40233. "No. 12. *Alubokhara*. Large red. Good both for dessert and for cooking."

40234. "No. 13. *Alubokhara*. Large yellow. Good both for dessert and for cooking."

40235. "No. 14. *Alubokhara*. Late yellow. Good both for dessert and cooking."

40233. JUGLANS PORTORICENSIS Dode. Juglandaceæ. **Walnut.**

From Adjuntas, Porto Rico. Presented by Mr. D. W. May, Agricultural Experiment Station, Mayaguez, Porto Rico, who secured the nuts from Mr. Bartolomé Barceló, Adjuntas. Received March 19, 1915.

"There is perhaps but one tree of this kind all around this district, and the people did not seem to know what it was. The owner of the tree informs me that these walnuts mature in April." (*Barceló.*)

40237 to 40258. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. **Sweet potato.**

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Received March 22, 1915. Quoted notes by Mr. Roig; yields stated in arrobas (of 25 pounds each) per caballería (33⅓ acres).

40237 to 40243. White group.

40237. "No. 24. *Blanco.* From Luyano, Havana. Yielding 43,930 arrobas per caballería."

40238. "No. 87. *Papa.* From Camaguey. Yielding 10,017 arrobas per caballería."

40239. "No. 93. *Amarrate conmigo.* From Taco Taco, Pinar del Rio. Yielding 15,026 arrobas per caballería."

40240. "No. 124. *Sequito.* From Bayamo, Oriente. Yielding 24,347 arrobas per caballería."

40241. "No. 155. *Rayo.* From Imias, Oriente. Yielding 3,869 arrobas per caballería."

40242. "No. 182. *Santiago.* From El Caney, Oriente. Yielding 22,817 arrobas per caballería."

40243. "No. 200. *Manf.* From Trinidad, Santa Clara. Yielding 29,217 arrobas per caballería."

40244 to 40256. Red group.

40244. "No. 19. *Vuelta-arriba.* From Santiago de las Vegas, Havana. Yielding 25,808 arrobas per caballería."

40245. "No. 34. *Màleta.* From Santiago de las Vegas, Havana. Yielding 84,869 arrobas per caballería."

40246. "No. 49. *Cienfuegos.* From Santiago de las Vegas, Havana. Yielding 28,813 arrobas per caballería."

40247. "No. 57. *Andrinito.* From Santiago de las Vegas, Havana. Yielding 9,130 arrobas per caballería."

40248. "No. 62. *Matojo.* From Cienfuegos, Santa Clara. Yielding 53,000 arrobas per caballería."

40249. "No. 71. *Tuno.* From Taco Taco, Pinar del Rio. Yielding 29,739 arrobas per caballería."

40250. "No. 97. *Manila colorado.* From Taco Taco, Pinar del Rio. Yielding 9,313 arrobas per caballería."

40251. "No. 99. *San Pedro colorado.* From Taco Taco, Pinar del Rio. Yielding 13,434 arrobas per caballería."

40252. "No. 121. *Mulato.* From Santiago de las Vegas, Havana. Yielding 27,304 arrobas per caballería."

40237 to 40258—Continued. (Quoted notes by Mr. J. T. Roig.)

40253. "No. 129. *Botija.* From Nueva Gerona, Isla de Pinos. Yielding 28,696 arrobas per caballería."

40254. "No. 195. *Sabanilla colorado.* From Trinidad, Santa Clara. Yielding 45,174 arrobas per caballería."

40255. "No. 255. *Mambf.* From Camaguey. Yielding 30,469 arrobas per caballería."

40256. "No. 233. *Isla de Pinos.* From San Luis, Pinar del Rio. Yielding 12,521 arrobas per caballería."

40257 and 40258. Violet group.

40257. "No. 21. *Vueltabajero.* From Botanical Garden, Havana. Yielding 36,347 arrobas per caballería."

40258. "No. 227. *Manf morado.* From Camaguey. Yielding 19,217 arrobas per caballería."

40259 to 40294.

From Alicante, Spain. Presented by Señor Gregorio Cruz Valero, engineering director of the Estacion Enologica de Cocoentaina. Received March 18, 1915. Quoted notes by Señor Valero.

40259 to 40279. ZEA MAYS L. Poaceæ. **Corn.**

40259 to 40266. "From the Province of Navarra."

40259. *Aricun,* from the Baztan Valley.

40260. *Rojo de Tudela,* from Tudela.

40261 to 40264. "From Pamplona."

40261. *Hembrilla jirafa.*

40262. *Cuenca.*

40263. *Hembrilla petit.*

40264. *Hembrilla.*

40265. "*Hembrilla del pueblo,* from Aranguren."

40266. "*Rojo de Ardanaz,* from Ardanaz."

40267. "Gathered from the neighborhood of Vitoria, in the Province of Alava."

40268. "From near San Sebastian, Province of Guipuzcoa."

40269 to 40271. "From the region of Galicia, in the Province of Corunna."

40269. *Corriente del pais.*

40270. *Flamenco.*

40271. *Del pais mejorado.*

40272 to 40279. "From the Canary Islands."

40272. From Batan.

40273. From Santa Brigidia.

40274. From Tafira.

40275. From Teror.

40276. From Agaete.

40277. From Telde.

40278. From Jinamar.

40279. From Los Hoyos, Arucas.

40280. CICER ARIETINUM L. Fabaceæ. **Chick-pea.**

"*Garbanzos,* from the Canary Islands."

40281. LATHYRUS SATIVUS L. Fabaceæ.

"*Chicharo blanco de Lanzarote,* from the Canary Islands."

40259 to 40294—Continued. (Quoted notes by Señor G. C. Valero.)

40282. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. **Lentil.**
(*Lens esculenta* Moench.)

"*Lenteja*, from the Canary Islands."

40283 to 40285. PISUM SATIVUM L. Fabaceæ. **Pea.**

"From the Canary Islands."

40283. (No notes.) 40285. *Arvejas.*

40284. *Arbejon de Lanzarote.*

40286 and 40287. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

"From the Canary Islands."

40286. *Frijol.* 40287. *Judias de color.*

40288 and 40289. VICIA FABA L. Fabaceæ. **Broad bean.**

"From the Canary Islands."

40288. *Habas moras.* 40289. *Haba Castellana.*

40290. LUPINUS ALBUS L. Fabaceæ. **Lupine.**

"*Altramuces de Hierro*, from the Canary Islands."

40291. LATHYRUS TINGITANUS L. Fabaceæ. **Tangier pea.**

40292. LATHYRUS SATIVUS L. Fabaceæ.

Chicharaca de Hierro.

40293. PHALARIS CANARIENSIS L. Poaceæ. **Canary grass.**

"*Alpiste*, from the Canary Islands."

40294. VICIA MONANTHOS (L.) Desf. Fabaceæ.

"*Lentejos de Tenerife*, from the Canary Islands."

40295 and 40296. QUERCUS spp. Fagaceæ. **Oak.**

From Zacuapam, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received March 24, 1915.

40295. QUERCUS INSIGNIS Martens and Galleotti.

See S. P. I. No. 39723 for previous introduction and description.

40296. QUERCUS sp.

40297. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 22, 1915.

"Seeds of a Moroccan pear, spontaneous, growing in abundance, from the forest of the Mamora. I believe this will make a good stock." (*Trabut.*)

40298. ERAGROSTIS sp. Poaceæ. **Perennial teff.**

From Burttholm, Union of South Africa. Presented by Prof. J. Burtt Davy, Transvaal Maize Breeding Station. Received March 23, 1915.

"Seed of a native species of Eragrostis, a perennial, which is a most excellent summer pasture and hay grass and one which establishes itself very readily on plowed ground, forming pure stands. It prefers a sandy loam, with a rainfall of about 26 inches in summer, and stands about 10 degrees F. of frost in dry weather. I have called it perennial teff and should like you to try it on the poor sandy lands of Florida." (*Davy.*)

40299 and 40300. HIBISCUS SABDARIFFA L. Malvaceæ. **Roselle.**

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station, through Mr. Paul Popenoe. Received March 25, 1915.

40299. "*Archer* roselle. Plant robust, frequently exceeding 1.60 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those in the red types; 'eye' yellowish; pollen pale yellow; stigma green; full-grown calyx greenish white, sparsely covered with short, stiff bristles; average length of calyx 45 mm., width 26 mm., including epicalyx 32 mm.

"The *Archer* is very prolific, and the fruit is somewhat less acid than that of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety that is said to resemble champagne in taste and appearance.

"Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested in the Lamao Experiment Station the same year. It has been named in honor of Mr. Archer, with whom the writer has had the privilege of being in correspondence for many years, and who has greatly assisted the Bureau of Agriculture in the introduction of many useful and decorative tropical American plants.

"The green type of roselle, to which the *Archer* belongs, was described as *Hibiscus digitatus* by Cavanilles in 1790, but it is now considered to be a form of *H. sabdariffa* L." (*Wester, The Philippine Agricultural Review, vol. 7, p. 267–268, June, 1914.*)

40300. "*Victor* roselle. This variety is distinguished by having the unifoliolate leaves of the young plant change early into leaves deeply 5-lobed, these leaf characters remaining until the flowering period, when the leaves become 3-parted or again unifoliolate. The stems and calyces are reddish. The pollen is a golden brown. The calyces average about 45 to 50 mm. in length and 28 mm. in equatorial diameter, tapering toward the apex; the calyx lobes are frequently convolute, and the fleshy spines subtending the calyx lobes are longer and more slender than in the *Rico*, and are curved upward. The *Victor* is more upright in habit than the *Rico* and somewhat earlier in fruiting, due probably to its having been cultivated in Florida for several years." (*Wester, The Philippine Agricultural Review, vol. 5, p. 126, Mar., 1912.*)

40301. ACROCOMIA CRISPA (H. B. K.) C. F. Baker. Phœnicaceæ. **Palm.**

From Cuba. Presented by Mr. C. T. Simpson, Littleriver, Fla. Received March 25, 1915.

"A most striking and beautiful palm, growing in a variety of soils and situations throughout the greater part of Cuba. The stem is seldom more than 8 inches in diameter at the base, but it rapidly expands to 2 feet or more, carrying its size up almost to the handsome, somewhat spiny leaves. In poor soil it seldom attains a height of over 20 feet, but in rich valleys it grows up to 60 feet. The very hard seeds had better be carefully cracked." (*Simpson.*)

40302. BAUHINIA KAPPLERI Sagot. Cæsalpiniaceæ.

From Littleriver, Fla. Presented by Mr. C. T. Simpson. Received March 25, 1915.

"A small tropical tree bearing large, handsome, pinkish flowers variegated with yellow and spotted with red. A rapid grower and abundant bloomer." (*Simpson.*)

40303. ELAEIS MELANOCOCCA Gaertn. Phœnicaceæ. **Oil palm.**

From Cristobal, Canal Zone. Obtained by Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 30, 1915.

"Large, spreading, low palm with short, thick, erect, or slightly trailing trunk. Grows in low, moist land close to the sea. Closely related to *Elaeis guineensis*, the African oil palm. Oil extracted in small quantities by the natives from the kernels. Appears suitable for plantings in Florida." (*Cook.*)

40304 to 40306. ANNONA spp. Annonaceæ.

From Cajabon, Guatemala. Presented by Mr. W. F. Curley, at the request of Mr. O. F. Cook, of the Bureau of Plant Industry. Received March 24, 1915.

40304. ANNONA RETICULATA L. **Custard-apple.**

"*Raxpac*, or *Anona morada* of warm climate; red fruit. (*Curley.*)

40305. ANNONA SCLERODERMA Safford. **Poxte.**

"The fruit is spherical or subglobose, with a hard shell having the surface divided into polygonal areoles by obtuse raised ridges. The seeds are comparatively large, compressed, and smoothly polished. The leaves are coriaceous, oblong, and acuminate, with the secondary nerves not prominent." (*Safford.*)

Mr. O. F. Cook, in his field notes, makes the following entry: "The fruit called by the Kekchi Indians, of Alta Verapaz, *boxte*, or *boshte*, is curious rather than beautiful. The shell is divided into angular depressed areoles by raised ridges. When mature the ridges are dark brown and the areoles between them green. The pulp is readily separable into slender pyramids. These are normally 1-seeded, but in many cases they are seedless. The texture of the pulp is perfect, the flavor aromatic and delicious, with no unpleasant aftertaste. It is much richer than the soursop, with a suggestion of the flavor of the *zapote blanco*, or *matasano* (*Casimiroa edulis*), but not in the least objectionable. It can be eaten most conveniently with a spoon. The most fragrant pulp is close to the rind. The seeds separate from the surrounding pulp more readily than in most Annona fruits."

40306. ANNONA SQUAMOSA L. **Sugar-apple.**

"*Pac*, or white-meat anona, not the *Tzunun* of cold country." (*Curley.*)

40307 to 40310. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

From Rosario, Argentina. Presented by Mr. William Dawson, jr., American consul. Received April 29, 1915. Quoted notes by Mr. Dawson.

"I am informed by dealers and growers at Rosario that flax grown in this district is not classified according to the botanical variety. The only classification is that based on the size and quality of the grain, which depends chiefly on the soil and methods of cultivation. Flax is grown in this district exclu-

sively for the seed, the fiber being burned. The following remarks are taken from an article on flax, written by Señor Carlos D. Girola and published in the reports of the agricultural and live-stock census of 1908, volume 3, pages 409 and 410:

"There exists no botanical or even agricultural classification of the varieties of flax grown in Argentina, and seeds vary so greatly according to soils and the conditions under which obtained that it is often difficult to establish by mere ocular examination the current classification which divides linseed into two main groups: *Linos grandes* (large flax or linseed) and *linos pequeños* (small flax or linseed), or *linetas*. The *linos grandes* were originally brought from southern Europe and particularly from the south of Italy. The *linos pequeños*, or *linetas*, seeds of which are smaller than those of the *linos grandes*, came from northern Europe, especially Russia, and resemble in form and color the linseed of Riga, Pskof, etc. The *linos grandes* require a richer soil and more temperate climate than does the smaller variety. The latter stands the cold better and gives satisfactory yields in less fertile soils where the *linos grandes* would not prosper. On account of its suitability for colder climates the *lineta* occupies the southern zone of the belt where flax is cultivated."

40307. "This is an average linseed representing the standard commercial product of the Province of Santa Fe."

40308. "This seed is typical of a high-grade linseed of the *lineta* type (small grain)."

40309. "Classed as a high-grade linseed."

40310. "Seed of a somewhat inferior linseed."

40311 to 40324. LATHYRUS spp. Fabaceæ.

40311 to 40315. From Kew, England. Presented by Sir David Prain, director, Royal Botanic Garden. Received April 27, 1915.

40311. LATHYRUS CIRRHOSUS Seringe.

Glabrous annual. Stem four-sided, wing angled. Leaflets two to three pairs. Flowering peduncles, one to three. Found in the Pyrenees Mountains. (Adapted from *De Candolle, Prodromus, vol. 2, p. 374, 1828.*)

40312. LATHYRUS GRANDIFLORUS Sibthorp and Smith.

Everlasting pea.

Perennial climbing legume. Leaves with one pair of leaflets.

"Stem winged, 4 to 6 feet long; leaflets large, ovate, obtuse, mucronulate, undulate, tendrils branched, short; stipules small; peduncles two to three flowered, longer than the leaves; shield large, obcordate, notched, broad, rose purple, wings dark purple; pod linear, 3 inches. June, July. Larger vine than *L. latifolius*, but weaker and less rampant. Flowers as large as those of the sweet pea. Free flowering, succeeding in any soil, not requiring much light. Adapted to banks, along walk margins in woods, among strong shrubs, and as a covering for rocks." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 888.*)

40313. LATHYRUS POLYANTHUS Boiss. and Blanche.

A glabrous, somewhat glaucous Lathyrus with prostrate or ascending angular stems, large ovate stipules, single-flowered peduncles, and yellow corolla. Found in Syria and Mesopotamia. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 602.*)

40311 to 40324—Continued.

40314. LATHYRUS SETIFOLIUS L.

A glabrous annual, with climbing or prostrate stems, 2 to 5 cm. (8 to 20 inches) long, slightly winged. Leaves short petioled, the lower without, the upper with branched tendrils. Leaflets long, narrow linear. Stipules hastate, usually linear lanceolate. Peduncles one flowered. Flowers scarlet red. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2. p. 1040.*)

40315. LATHYRUS UNDULATUS Boiss.

Perennial climbing legume. Leaves with one pair of leaflets.

"Stems twining, broadly winged; leaflets oblong; peduncles five to six flowered; flowers a mauve red. A form intermediate between *L. latifolius* and *L. rotundifolius*. A somewhat tender species, said to be six weeks earlier than any other." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 888.*)

40316 to 40324. From Edinburgh, Scotland. Presented by Dr. I. Bailey Balfour, Royal Botanic Garden. Received April 26, 1915.

40316. LATHYRUS MONTANUS Bernh.

"Perennial, stem simple, angled, smooth; leaflets five to eight pairs, large, elliptic lanceolate, pointed, glaucous below; peduncles many flowered, a little shorter than the leaves; flowers large, orange-yellow. June, July. Forests of the Alps. A shade-enduring species with flowers erect in spikelike clusters and adapted to borders and rockeries." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40317. LATHYRUS NISSOLIA L.

An erect or ascending nearly glabrous annual, 2 to 4 meters (8 to 16 inches) high, with simple, rarely branched, 4-angled stem. Petioles leaflike, without tendrils. Stipules small, subulate. Peduncles slightly pubescent, one (rarely two) flowered. Flowers purple. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1023.*)

40318. LATHYRUS SPHAERICUS Retzius.

A small annual, usually not over 75 cm. (2½ feet) high. Leaflets of the upper leaves 8 cm. (3 inches) long and 1 to 6 mm. (one-twenty-fifth to one-fourth inch) broad. Stipules hastate lanceolate, longer than the petiole. Flowers less than 1 cm. (three-eighths inch) long, brick red. Native of Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1037.*)

40319. LATHYRUS SYLVESTRIS L. **Flat pea.**

See S. P. I. Nos. 20776 and 32415 for previous introductions and description.

40320. LATHYRUS UNDULATUS Boiss.

See S. P. I. No. 40315 for description.

40321. LATHYRUS VENETUS (Mill.) Rouy.

Stem prostrate, usually branching underground. Leaflets broadly oval, subacute, 4 cm. (1.6 inches) long, 2 cm. (0.8 inch) broad, short ciliate. Peduncles thicker than in *L. vernus*. Flowers nearly half as large. Petals clear purple, the standard darker with dark stripes.

40311 to 40324—Continued.

Pods covered with small brown to red glands. Seeds brown. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol 6, p. 1049.*)

40322. LATHYRUS VERNUS (L.) Bernh. **Spring bitter vetch.**

"Perennial, stem simple, somewhat pubescent, 1 to 2 feet long; leaflets two to three pairs, ovate acuminate, light green; stipules entire; peduncles five to seven flowered, shorter than the leaves; flowers blue-violet; keel shaded with green, nodding. May, June. Hills and woods, southern and central Europe. The most popular Orobus; a compact, tufted plant, growing quickly in sun or a little shade; best in deep, sandy loam, in a sheltered position; hardy." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40323. LATHYRUS VERNUS FLACCIDUS Arcang.

"Differs from the species in its narrower and longer leaflets and lanceolate stipules." (*Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 2, p. 1048.*)

Distribution.—Southern France and northern Italy.

40324. LATHYRUS VERNUS (L.) Bernh.

Var. *azureus.* A blue-flowered form.

40325 and 40326. HORDEUM spp. Poaceæ. **Barley.**

From Chungking, China. Presented by Mr. E. Carleton Baker, American consul. Received April 21, 1915.

"Barley is not grown to any extent in the vicinity of Chungking. As stated by Mr. E. H. Wilson, the botanist, in his book on Szechwan, 'it is only in the mountainous Tibetan borderland that it is largely grown. The Chinese do not care for the meal, and the grain is chiefly used for making spirits and for feeding pigs and other domestic animals.'" (*Baker.*)

40325. HORDEUM VULGARE NIGRUM (Willd.) Beaven.

40326. HORDEUM VULGARE PALLIDUM Seringe.

40327. STUARTIA MONADELPHIA Sieb. and Zucc. Theaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum, which secured it from Dr. H. Shirasawa, Forest Experiment Station, Meguro, near Tokyo, Japan. Received April 28, 1915.

Yama tsia (Japanese). An ornamental small tree or shrub with alternate subflexuous branches; alternate, serrate, ovate-oblong leaves and small white flowers solitary in axils of the leaves. The flower is subtended by a pair of ovate or oblong bracts. Calyx five parted. Corolla regular, five petals. Stamens indefinite, monadelphous. Styles five. (Adapted from *Siebold and Zuccarini, Flora Japonica, p. 181.*)

"A deciduous shrub or small tree, 30 feet high; bark peeling, young shoots clothed at first with fine hairs. Leaves oval or ovate oblong, 1½ to 4 inches long, five-eighths to 1¾ inches wide; wedge shaped at the base, tapered at the apex, toothed; at first hairy on both surfaces (but more densely so above) and at the margin, becoming almost smooth; bright green on both sides; stalk hairy, one-eighth to one-fourth inch long. Flowers solitary in the leaf axils, 1 to 1½ inches across, white, fragrant. Stamens numerous, downy; style united into one column, 5-rayed at the top; bracts, sepals, and petals silky at the back.

"Native of Japan and China; introduced from the latter country by Wilson about 1901. Whether this is quite the same as the Japanese form is not certain, but in both countries they are characterized by hairiness of leaf and shoot, and are thereby distinguished from *S. pseudo-camellia*. Little is known of it in gardens, where only small plants exist, but it does not appear to be equal in beauty to the other species." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 553.*)

40328 to 40330. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

From Erfurt, Germany. Purchased from Haage & Schmidt. Received April 26, 1915.

40328. CHRYSANTHEMUM LEUCOPILODES Hort.

"A subalpine perennial with silver-white leaves and large yellow flower heads. Suitable for rockery. Asia Minor." (*Haage & Schmidt, catalogue.*)

40329. CHRYSANTHEMUM KURDICUM Hort.

40330. CHRYSANTHEMUM MACROPHYLLUM Waldst. and Kit.

A somewhat villous, erect Chrysanthemum with pubescent, nearly sessile, pinnately parted leaves; broadly lanceolate, dentate lobes; composite corymbs; subglobose involvucres; white-ray flowers and whitish disk flowers. Eastern Europe. (Adapted from *De Candolle, Prodromus, vol. 6, p. 58.*)

40331. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 24, 1915.

"Seeds of a Moroccan pear from the Mamora. It occurs with the cork oak in the forest of Moroccan Mamora. Very resistant to dryness in the sandy, noncalcareous soils. This vigorous tree will probably form a good stock. The fruit is rather large; the seeds very large." (*Trabut.*)

40332. ACTINIDIA ARGUTA (Sieb. and Zucc.) Planch. Dilleniaceæ.

From Chosen (Korea). Presented by Mr. D. F. Higgins, Peking, China, Received April 26, 1915.

"Korean, *darch*. These seeds are in rather small fruits, on account of the lateness of the season when they were gathered. They were secured through the kindness of Mr. P. C. Kang, of Holkol, Chosen (Korea), a Korean friend of mine. It is characteristic of the spirit of the Koreans that the coolies had to go about 8 miles and over a pass which required an ascent and descent of more than 2,000 feet and would receive but 20 sen (a little less than 10 cents, United States currency) apiece for their day's work (half pay), because they could not secure first-rate specimens of the *darch* fruit." (*Higgins.*)

40333. MEIBOMIA UNCINATA (Jacq.) Kuntze. Fabaceæ.
(*Desmodium uncinatum* DC.)

From San Jose, Costa Rica. Presented by Mr. Otón Jiménez L., Costa Rican National Museum. Received April 27, 1915.

"This seed was secured with much difficulty on the banks of the Rio Torres, because at this inopportune time the inflorescences contain few seeds." (*Jiménez L.*)

40334 to 40336. Lathyrus spp. Fabaceæ.

From Cambridge, England. Presented by Dr. R. Irwin Lynch, Botanic Garden. Received April 26, 1915.

40334. Lathyrus heterophyllus L.

Plants gray-green, up to 3 m. (10 feet) long. Lower leaves with one pair, upper with two to three pairs of leaflets. Petioles winged on the upper portion and not between the leaflets. Leaflets lanceolate, acuminate. Flowers purple. Throughout Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mittel-Europäischen Flora, vol. 6, p. 1017.*)

40335. Lathyrus palustris L. **Marsh pea.**

"Stem slender, 1 to 3 feet long, glabrous or somewhat pubescent, often winged, rather erect; leaflets two to four pairs, oblong lanceolate, acute, 1 to 2 inches long; tendrils branched; stipules small, lanceolate; peduncles two to eight flowered, scarcely longer than the leaves; flowers purplish, one-half inch long; pod 2 inches long. Summer. Northern North America and northern Europe, in moist places. A good bog plant." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

40336. Lathyrus sylvestris L. **Flat pea.**

See S. P. I. Nos. 20776 and 32415 for previous introductions and description.

40337. Phaleria blumei (Decne.) Bentham. Thymelæaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received April 26, 1915.

"The bark of this shrub is used for cordage; it is a rare species." (*Buysman.*)

Bushy glabrous shrub with opposite nearly oblong leaves, 6 inches long and 2 inches broad. Numerous white or yellowish flowers in terminal heads. Fruit a drupe with a succulent but not very thick epicarp. Found throughout the Malay Archipelago, southern Asia, and the islands of the North and South Pacific.

40338. Diospyros ebenaster Retz. Diospyraceæ. **Black sapote.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received April 23, 1915.

See S. P. I. Nos. 24600 and 39719 for previous introductions and description.

40339 to 40344.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn. Received April 27, 1915. Quoted notes by Mr. Gwynn.

40339. Abelmoschus esculentus (L.) Moench. Malvaceæ.
(*Hibiscus esculentus* L.)

"Seed of okra that I have continually raised in this country for the last 25 years, from seed sent from North Carolina."

For previous introductions, see S. P. I. Nos. 33749, 34465, and 37806.

40340. Carica papaya L. Papayaceæ. **Papaya.**

"*Mamoni.* Tree melon; grows to a height of 5 to 6 yards. Excellent for man, animals, and fowls."

40341. Cucurbita sp. Cucurbitaceæ.

"*Andiy.* A cross between squash and pumpkin. The plant is of tremendous growth and surpasses anything in the pumpkin line I have ever seen. Yields enormously."

40339 to 40344—Continued. (Quoted notes by Mr. T. R. Gwynn.)

40342. GOSSYPIUM sp. Malvaceæ. **Kidney cotton.**

"*Mandiyu.* I planted this in August, and it is now just beginning to bloom. If a cold snap comes in June or July there will be no yield this year, but the plant, cut down something like a foot from the ground, will produce next year. The plant grows to be some 3 to 4 yards in height and yields to its full capacity for some 8 to 10 years. It is no good in comparison with our cotton."

40343. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"Fruit about the size of a walnut; green skin and red meat; leaf thick, coarse, and rough. Tree about the size of a grafted apple. It is not cultivated here. There are several varieties of this fruit; I send the one I think the best."

40344. ROLLINIA sp. Annonaceæ.

"*Aretácu.* Luxuriant tree. Fruit small and of little use on account of seed."

40345 to 40348.

Presented by Mr. H. M. Curran. Received April 30, 1915. Quoted notes by Mr. Curran, except as otherwise indicated.

40345. ANACARDIUM sp. Anacardiaceæ. **Cashew.**

"From Para, Brazil. An edible, wild, red-fruited cashew nut. Large tree."

40346. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"From Santos, Brazil. Similar in size to the Philippine papaya."

40347. CHRYSOPHYLLUM CAINITO L. Sapotaceæ. **Star-apple.**

"From Trinidad, British West Indies. Star-apple; purple fruit."

"A fairly handsome West Indian tree, with striking dark-green leaves, which are copper colored underneath. The purplish black, smooth fruit is round in shape, about 2½ to 3 inches in diameter, and usually two to four seeded, the seeds being brown and one-half inch long. In an unripe state the fruit contains a sticky white latex, but when fully matured the white, transparent, jellylike substance surrounding the seed is sweet and agreeable. The fruit when cut across presents a stellate form, the cells with their white edible contents radiating from the central axis; hence the name star-apple. The tree is well worth cultivating for ornamental purposes, or as shade for roadsides, etc. It thrives at Peradeniya, where it was first introduced in 1802. Propagated by seed, and thrives best in deep, rich, and well-drained soil." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 135.*)

40348. POUTERIA CAIMITO (Ruiz and Pavon) Radlkofer. Sapotaceæ. (*Lucuma caimito* Ruiz and Pavon.) **Abíu.**

"From Para, Brazil. Edible sapotaceous fruit; large, yellowish in color."

See S. P. I. No. 37929 for previous introduction and description.

40349 and 40350. LATHYRUS spp. Fabaceæ.

From Groningen, Netherlands. Presented by the director, University Botanic Gardens. Received May 1, 1915.

40349 and 40350—Continued.

40349. LATHYRUS MONTANUS Bernh.

For previous introduction and description, see S. P. I. No. 40316.

40350. LATHYRUS NIGER Bernh. **Black pea.**

"Stem erect or ascending, branched, angled, 1 to 2 feet long; leaflets six to eight pairs, elliptical or ovate, one-half to 1 inch long, light green, turning black when drying; stipules narrow, small peduncles six to eight flowered, longer than the leaves; flowers purple, small. June, July. Mountainous and rocky districts, middle Europe. Slender species, with short rootstocks, succeeding in the shade." (*Bailey, Cyclopedia of American Horticulture, vol. 2, p. 889.*)

See S. P. I. No. 22554 for previous introduction.

40351. SPONDIAS sp. Anacardiaceæ. **Ciruela.**

From Pacasmayo, Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 11, 1915.

"No. 33, March 25, 1915. Fruits scarlet or coral in color." (*Cook.*)

40352 to 40367. LINUM USITATISSIMUM L. Linaceæ. **Flax.**

From Argentina. Presented by Mr. Leo J. Keena, American consul general, Buenos Aires, Argentina. Received May 3, 1915. Quoted notes by Mr. Keena.

"I append herewith the following information in regard to the linseed market, which may be of interest: Linseed in Argentina is cultivated exclusively for the seed, no advantage being taken of the fiber for textile purposes on account of lack of initiative in this country. During the season of 1913–14 the total area under cultivation was 4,396,774 acres, of which 1,375,112 acres corresponded to the Province of Santa Fe, 1,131,950 acres to Cordoba, and the balance equally divided between the Provinces of Entre Rios and Buenos Aires. During the year 1914 the total exports amounted to 938,016 metric tons."

40352. "Taken from a shipment of 70 tons from the station of San Guillermo, on the Central Argentina Railway."

40353. "Taken from a 300-ton shipment from the station of Morteros, on the Central Argentina Railway."

40354. "Taken from a 100-ton shipment from the station of Morteros, on the Central Argentina Railway."

40355. "Taken from a 70-ton shipment from the station of Timbres, on the Santa Fe Railway."

40356. "Taken from a 150-ton shipment from the station of Canada Rosquin, on the Cordoba and Rosario Railway."

40357. "Taken from a 400-ton shipment from the station of San Genaro, on the Central Argentina Railway."

40358. "Taken from a 100-ton shipment from the station of Coronel Bogado, on the Cordoba and Rosario Railway."

40359. "Taken from a shipment of 200 tons at the station of Morye, on the Santa Fe Railway."

40360. "Taken from a 30-ton shipment from the station of Carabelas, Province of Buenos Aires."

40361. "Taken from a 50-ton shipment from the station of Casilda, on the Central Argentina Railway."

40352 to 40367—Continued. (Quoted notes by Mr. L. J. Keena.)

40362. "Taken from a 25-ton shipment from the station of La Pereira, on the Central Argentina Railway."

40363. "Taken from a shipment of 50 tons from the station of Cayugueo, on the Central Argentina Railway."

40364. "Taken from a shipment of 50 tons from the station of Wildermuth, on the Central Argentina Railway."

40365. "Taken from a shipment of 200 tons from the station of Irigoyen, on the Central Cordoba Railway."

40366. "Taken from a 300-ton shipment from the stations of Pilar and Moisesville, on the Santa Fe Railway."

40367. "Taken from a 90-ton shipment from the station of Cruz, on the Central Argentina Railway."

40368. ROSA SERTATA Rolfe. Rosaceæ. **Rose.**

From Kew, England. Presented by Mr. Arthur W. Hill, assistant director, Royal Botanic Gardens. Received March 29, 1915.

For previous introduction and description, see S. P. I. No. 40193.

40369. ZEA MAYS L. Poaceæ. **Corn.**

From Santa Rosita, Guatemala. Presented by Mr. John J. Gruchy. Received March 31, 1915.

"In regard to weevil-proof corn, I regret to say that further experience shows the corn to which you refer to be not entirely weevil proof, although it is more resistant to the weevil than the ordinary flint corns here, probably owing to the fact that it has a much thicker skin. It is a native sweet corn discovered by me when endeavoring to improve a yellow flint corn cultivated here. It was of extremely mixed type, so that a single ear would often contain grains of four or five quite distinct types. As a starter, I separated my seed into lots belonging more or less to the different types represented, and planted them separately for comparison. For several seasons after the segregation new types kept appearing, many of them quite different from the original planting, and finally I observed in some ears scattering grains which looked like sweet corn. I secured two distinct ears of sweet corn, one yellow and the other of a reddish brown color. At this altitude, 4,800 feet, I believe it takes between four and five months to mature. The reddish strain has been lost and I doubt if it reappears. As a roasting ear it is quite sweet, but the skins are so thick that I spit them out. This characterisic is quite undesirable in a sweet corn, but possibly if it could be transferred by crossing to a dent corn, it might help to increase its resistance to weevil while still green in the field." (*Gruchy.*)

40370 to 40376. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

From Wakamatsu, Iwashiro, Japan. Presented by Rev. Christopher Noss. Received March 27, 1915. Quoted notes by Mr. Noss.

40370. "No. 33. *Hikagedaizu* (shade), produces in shady places; used for *miso*."

40371. "No. 34. *Dekisugidaizu* (excessive yield); used for *miso*."

40372. "No. 35. *Kurodaizu* (black); eaten boiled and sugared."

40373. "No. 36. *Nakatedaizu* (medium early); used for *miso*."

40370 to 40376—Continued. (Quoted notes by Rev. C. Noss.)

40374. "No. 37. *Hishidaizu* (water caltrop, alluding to the flattened shape); eaten parboiled and seasoned with shoyu and salt."

40375. "No. 38. Name unknown, cultivated from ancient times in Soma County, Fukushima Ken; used for *miso*."

40376. "No. 39. *Hakodate-nishiki-daizu* (Hakodate brocade); used for *miso*."

40377 to 40382. MEDICAGO spp. Fabaceæ.

From Sydney, New South Wales. Presented by Mr. G. Valder, undersecretary and director, Department of Agriculture. Received March 31, 1915.

From the Bathurst Experiment Farm. Selected.

40377 to 40381. MEDICAGO SATIVA L. **Alfalfa.**

40377. Bathurst No. 1.
40378. Bathurst No. 6.
40379. Bathurst No. 13.
40380. Arabian.
40381. Montana.

40382. MEDICAGO SATIVA VARIA (Mart.) Urban. **Sand lucern.**

40383 and 40384.

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received March 29, 1915.

40383. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

"Seeds of a tree which grows very well in many parts of our State." (*Knatz.*)

40384. COLOCASIA sp. Araceæ.

Mangarita. Tubers.

40385 to 40387.

From Nakskov, Denmark. Presented by Mr. R. Wiboltt. Received March 26, 1915. Quoted notes by Mr. Wiboltt.

40385. AVENA SATIVA L. Poaceæ. **Oat.**

"*Abed Danisk Giant No. 45.* The best Danish oat."

40386. HORDEUM DISTICHON NUTANS Schubl. Poaceæ. **Barley.**

"*Abed Binder*, 2-rowed novelty, 1915. This has been tried for a number of years by the Danish State experiment stations and is now acknowledged as one of the earliest and heaviest yielders of all kinds of 2-rowed barley."

40387. HORDEUM VULGARE L. Poaceæ. **Barley.**

"*Abed*, July, 6-rowed novelty, 1915. This has been tried for a number of years by the Danish State experiment stations and is now acknowledged as one of the earliest and heaviest yielders of all kinds of rowed barley."

40388. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ.

Sweet potato.

From Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station, Santiago de las Vegas, Cuba. Tubers received March 22, 1915.

"No. 68. *Ciclón*, white group. From Taco Taco, Pinar del Rio. Yielding 37,478 arrobas (of 25 pounds each) per caballería (33⅓ acres)." (*Roig.*)

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Issued March 30, 1918.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1915.

(No. 43; Nos. 40389 to 40895.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1915 (NO. 43; NOS. 40389 TO 40895).

INTRODUCTORY STATEMENT.

The plant material recorded in this inventory represents collections made and gifts received from different parts of the world while the European war was in progress, and, as showing how little the war has affected the attitude of the scientific men with whom this office is in touch, it may be remarked that specialists in the following countries have furnished plants or seeds in response to requests or upon their own initiative: Italy, France, Holland, England, and their colonies, Russia, China, Sweden, Greece, Spain, Mexico, Argentina, Japan, Colombia, Turkey, Peru, Costa Rica, Ecuador, Chile, Guatemala, Cuba, Liberia, and Paraguay. While the number of shipments falls below that of similar periods before the war and is probably much below what it would have been had there been no war, it is nevertheless a substantial showing of cooperation among the scientific plant enthusiasts of the world.

The most notable collections recorded in the inventory are those made by the Department's explorer, Mr. Frank N. Meyer, during his expedition into the little-known Province of Kansu, in northwestern China. This expedition was made from Peking, from which city Mr. Meyer started on June 29, 1914, his route taking him through the following principal cities of China and enabling him to get a general idea of the field for exploration there: Changte (Honan), Luanfu, Pingyangfu, Wensi, Tungchowfu, Sianfu, Paoki, Fenghsien, Huihsien, Chenghsien, Chiehchow, Siku, Minchow, Taochow, Titaochow, Lanchowfu, Pingliang, Kingchow, and Pinchow.

It is outside the province of this brief introduction even to sketch the accomplishments of this expedition, which lasted seven months, further than to call attention to the plant species which were discovered during its progress, as enumerated in this inventory. Mr.

NOTE.—This bulletin is a record of new or little-known seeds and plants procured mostly from abroad. It is intended for distribution to agricultural experiment stations and the more important private cooperators.

Meyer's character sketches of the things he finds and the uses which he believes can be made of them are always interesting reading, and often they give a glimpse into the circumstances surrounding the discovery and securing of the seeds or other plant material which he sends in to be grown somewhere in this country. As only little more than a year has passed since these collections were sent in, it is manifestly impossible to indicate anything regarding the ultimate success of the various introductions which he made.

One unfortunate circumstance it may not be out of place to record here, as it may have a bearing upon the botany of some of Mr. Meyer's introductions. Although perhaps the most laborious work of the expedition was the collecting and drying of the herbarium specimens, of which he procured a large number, a considerable portion of his collections was lost in the great Galveston storm, which by an unfortunate coincidence struck that city just as his collections were on the "last lap," so to speak, of their long steamer and railroad journey from Kansu to Washington. About a third of his specimens were ruined, especially herbaceous material, but the larger part of the woody specimens were saved, mounted, and are now in the herbarium.

A variety of hull-less oats (S. P. I. No. 40650) and a hull-less barley (S. P. I. No. 40652), two varieties of high-altitude corn (S. P. I. Nos. 40653 and 40654) from western Kansu, near the borders of Tibet, and five varieties of kaoliang collected in the Provinces of Shensi and Kansu, may prove of value in the development of varieties suited to our own high plateaus.

The recent researches of Reimer, which indicate that certain of the Chinese pear species have a remarkable resistance to pear blight, will give an unusual interest to the collection of three as yet undetermined forms of Pyrus from Kansu.

The collection of Chinese jujubes at Chico has been enriched by two varieties (S. P. I. Nos. 40506 and 40877) which Mr. Meyer considers stand second only to a variety which he discovered previously at Paihsiangchen, Shansi. One of these (S. P. I. No. 40506) has fruits as large as a small hen's egg and unlike most varieties is destitute of spines when old and produces trees having trunks $1\frac{1}{2}$ feet in diameter. Another (S. P. I. No. 40878) is used for boiling with millet, or much as we do raisins for baking in bread.

As was expected, Mr. Meyer found that Kansu possesses a great variety of ornamental trees and shrubs. Two species of Viburnum (S. P. I. Nos. 40692 to 40694), three species of Euonymus (S. P. I. Nos. 40696 to 40698), four species of rose (S. P. I. Nos. 40699 to 40702), and a linden (S. P. I. No. 40720) which may make a valuable park tree are among those recorded in this inventory.

At an altitude of 6,000 feet near Lungteh, Kansu, Mr. Meyer found the *davidiana* peach (S. P. I. No. 40722). This is possibly its most

western locality in China. Those interested in the breeding of hedysarums for the production of hardy forage varieties or as ornamentals will welcome two species, as yet undetermined, which Mr. Meyer found in Kansu (S. P. I. Nos. 40746 and 40747). The gall nuts of China, which are exported in large quantities from Hankow and are used for a black dye by the Chinese and for tanning purposes by Europeans, Mr. Meyer found to come from the Shensi Province and to be produced by a gall insect which attacks the leaves of a native sumac, *Rhus potanini* (S. P. I. No. 40717), which sumac might easily be grown on cheap lands in our Southern States, as it is not particular as to soil requirements. Both this species and another from the same region, *Rhus javanica* (S. P. I. No. 40716), are handsome ornamentals.

Since the Chinese pistache (*Pistacia chinensis*) has shown itself adapted to the Southwest and avenues of it have been started, it is interesting to have Mr. Meyer's record of a tree at Tsaichiapu (S. P. I. No. 40662) which has a girth of 16 feet, measured 5 feet above the ground. The wide range of territory in which the Chinese elm (*Ulmus pumila*) has succeeded will make Mr. Meyer's introduction of a weeping variety of this species of unusual interest (S. P. I. No. 40507).

Camoensia maxima, the largest flowered legume known, a tropical vine producing fragrant blooms as beautiful as many orchids, has flowered in Cuba from plants distributed from this office, and another introduction (S. P. I. No. 40391) has been made from Angola, where it spreads underground to great distances. It deserves to be naturalized in the hammocks of southern Florida.

Ninety-one species and varieties of the genus Ribes (S. P. I. Nos. 40406 to 40496) has been assembled for the studies of the white-pine blister rust, for which certain species appear to be a secondary host. Among these are a number of very interesting hybrids and new or rare species, such as the hybrid between the black currant and the gooseberry (× *Ribes schneideri*), Wilson's *Ribes longeracemosum*, and the × *Ribes succirubrum*, the plants of which are reported to be in their second generation identical with those of the first generation.

Dr. Eisen has sent in a fig variety from Naples called the Troiaro (S. P. I. No. 40499) which he considers superior to the White Adriatic and declares to be the best table fig in Italy. It requires a more even climate than that of Fresno in which to mature, but is not affected seriously by fall rains. Prof. Savastano, the veteran horticulturist of southern Italy, has sent from his own garden at Acireale, Sicily, what he considers to be the best walnut of the Sorrento type (S. P. I. No. 40394).

Prof. J. Burtt Davy calls attention again to the success in the Transvaal of the Abyssinian teff (*Eragrostis abyssinica;* S. P. I. No.

40535), which he says has become a standard hay crop, teff hay selling for as much as £5 a ton in Johannesburg.

The tabog of the Philippines (*Chaetospermum glutinosum*), seed of which our late collaborator, Mr. William S. Lyon, sent in (S. P. I. No. 40550), represented in the mind of this experienced observer, whose death has recently been announced by the papers and whose contributions to these inventories have been most valuable, a possible stock for citrus fruits.

The begonia, which years ago Prof. I. B. Balfour, of the Edinburgh Botanic Gardens, brought back from the island of Socotra, east of the Gulf of Aden, appears to have been most successfully used in the production of a race of winter-blooming begonias (S. P. I. No. 40526).

Of ornamentals for city dooryards and home gardens a number of new or rare species are represented in this inventory—the yellow-flowered *Clematis tangutica* (S. P. I. No. 40570), the dwarf Chinese box, *Buxus harlandii* (S. P. I. No. 40566), the *Cotoneaster dielsiana* (S. P. I. No. 40575) from central China, *Vitis flexuosa parvifolia* (S. P. I. No. 40600) from the same region, *Primula littoniana* (S. P. I. No. 40857) from Yunnan, and *Pyrus salicifolia* (S. P. I. No. 40497) from Russia.

Apple breeders may be interested in the new species of Malus from Formosa, *Malus formosana* (S. P. I. No. 40619), which is very distinct from all other species of this genus, and asparagus breeders in *Asparagus lucidus* (S. P. I. No. 40617) from the same island, the roots of which are preserved in sugar and called Tenmondo in Formosa.

To assist in a study of the insecticidal properties of pyrethrum, a large collection of species of Chrysanthemum was introduced (S. P. I. Nos. 40511 to 40513, 40542 to 40548, and 40627 to 40644) and tested by the Insecticide and Fungicide Board.

What success will attend the trial in Florida and California citrus groves of *Cracca candida* (S. P. I. No. 40894) and *Cracca villosa purpurea* (S. P. I. No. 40895), two cover-crop plants from Ceylon, remains to be seen. The former appears to be a favorite green-manure crop in that tropical island.

Chinese names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many names of the smaller villages, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that reference work.

As heretofore, this inventory has been prepared by Miss May Riley, the botanical determinations of seeds introduced have been made by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. S. C. Stuntz, who has also had general supervision of this inventory, as of all the publications of this office.

It is with deep regret that we record here the death of Mr. Stephen C. Stuntz, which occurred on February 2, 1918, while this inventory was in press. Mr. Stuntz had charge of the publications of this office for more than seven years. Through an unusual acquaintance with languages and with bibliography he had built up and systematized these publications, which are known throughout the country to thousands of amateur and professional gardeners and practical farmers, and many of the improved appliances and methods which have served to make the work of plant introduction a success were due to his thought and ingenuity.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., February 20, 1918.

INVENTORY.

40389. PYRUS COMMUNIS L. Malaceæ. **Pear.**

From Novospasskoe, Russia. Presented by Mr. A. D. Woeikoff, director, Jardin Expérimental de l'École Horticulture, Cholmy. Received April 7, 1915.

Var. *caucasica.*

40390. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

From Foxboro, Mass. Presented by Rev. Father C. N. Field. Received April 2, 1915.

"Flowering beans, grown at St. Augustine's Children's Farm, Foxboro, last year. Quite pretty bunches of flowers, the seeds of several kinds of which were brought me from Jamaica." (*Field.*)

40391. CAMOENSIA MAXIMA Welw. Fabaceæ.

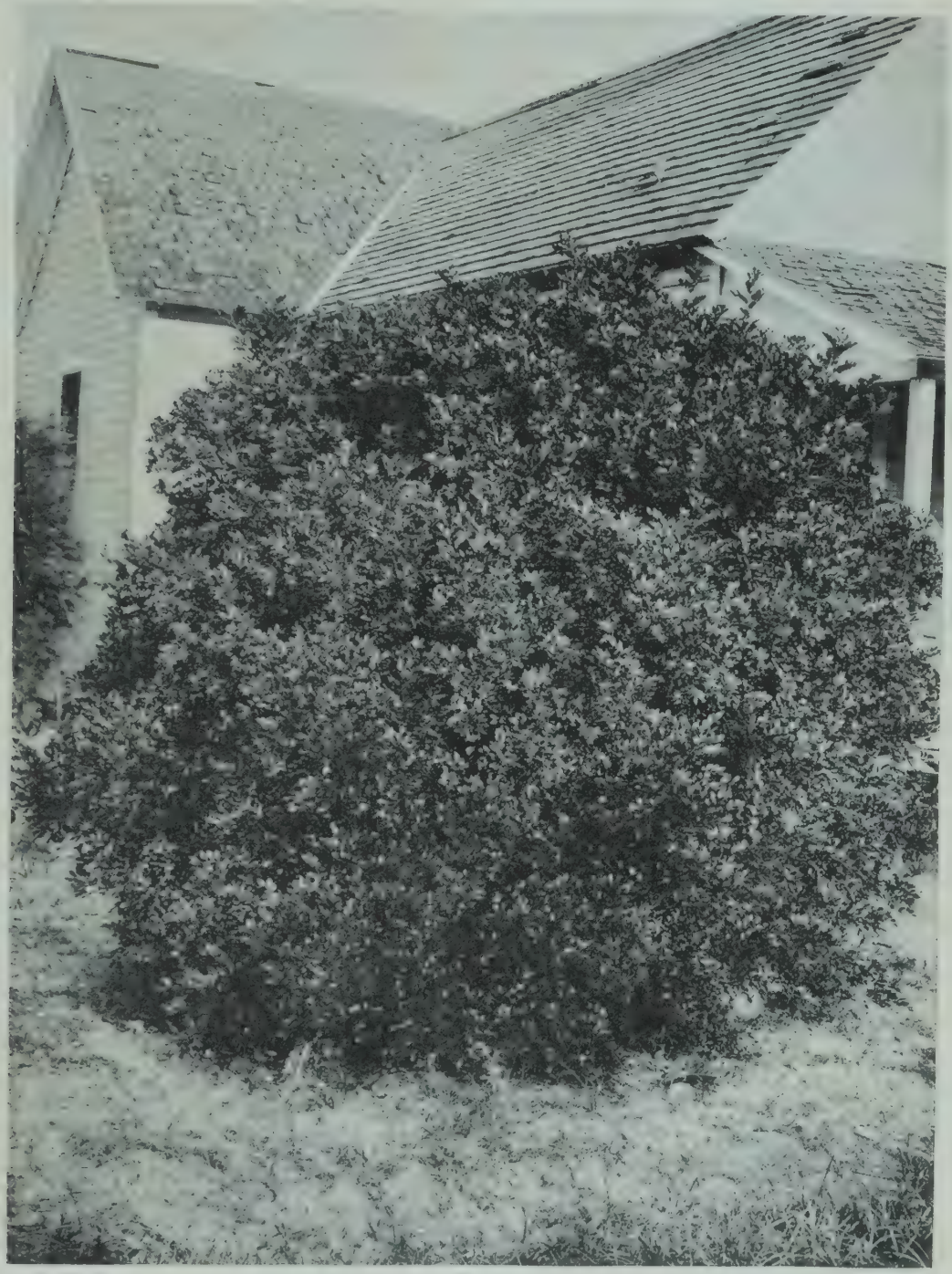
From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received April 7, 1915.

"The plant upon which this genus was founded was discovered in Angola by the late Dr. Welwitsch when in the Portuguese service, and by him it was in consequence named after the famous Lusitanian poet. It is a climbing shrub, 'common in the dense forests of the Golungo Alto, adorning the loftiest trees of the outskirts with its splendid bunches of pendulous milk-white flowers, tinged with gold on the edge of the petals.'

"The specimen before us is slightly puberulous, with long-stalked trifoliolate-acuminate leaves, minute stipules, and close racemes of flowers, which under cultivation are erect rather than pendulous, as originally described and figured, but which, when growing over tall trees, as described by Dr. Welwitsch, might well be pendent, as he described them. The inflorescence and outer portion of the calyx are thickly covered with dense, felted, coarse brown hairs. The bracteoles are about half an inch long, lanceolate, deciduous. The calyx tube, measuring about 2 inches in length, is leathery, cylindric, curved, dividing into a relatively short, irregularly 5-lobed limb, of which the thick segments are imbricate in the bud. The five petals, which are twice the size of the calyx, all have long white, narrow stalks, and all expand above into a spoon-shaped limb, somewhat papery in texture, plicate and crumpled in the bud, reticulate in venation, and edged with a narrow border of rich orange yellow, which Mr. Woodall describes as tipped with gold lace, so delicate and fairylike is the frilled edging. The uppermost petal, or standard, is much larger than the others, and has the inner surface of the disk as well as the margins flushed with yellow. The side petals, or wings, are at first upright and rigid within the standard, but, as the artist remarked while making his sketch, they are endowed with elasticity when touched by the pencil, and after the discharge of the pollen they become drooping. The two lower petals and the stamens are also at first quite rigid, but subsequently fall. The snow-white stamens are shorter than the petals, 10 in number, forming a tube at the base, filamentous above. The narrow, angular

ovary is stalked, its stalk adherent to the tube of the calyx for its lower half. The cylindric style is slightly hairy at the upper part, and terminates in a green, cushion-shaped stigma. The flowers have a delicate fragrance, which has been compared to that of vanilla. The yellow color of the edge of the petals is apparently due to the presence of coloring matter in the four or five rows of cells nearest to the margin. Those at the extreme edge are raised into pimplelike elevations, whilst those on the surface of the disk of the petal are flat and sinuous in outline, containing in some cases oil in small quantities and minute starch grains, or some substance faintly colored blue by iodine. The thin texture of the petals causes them to be fugacious, and the golden rim which is so beautiful an adornment to the frilled edge very soon turns to dirty brown. These circumstances detract greatly from the value of the flower in a gardener's eyes, but it must be remembered that the flowers are in clusters and open in succession and that when grown as seen by Welwitsch in Angola they no doubt amply justify his eulogium.

"Mr. Monteiro, to whom we are indebted for the introduction of this and many other African rarities sent by him at different times to Kew from Angola, thus writes of the Camoensia in his interesting book, Angola and the River Congo (MacMillan, 1875): 'It was at Quiballa (a large town situated on a low flat-topped hill on the northern limit of Angola) that we were so fortunate as to obtain specimens of the flowers and a quantity of ripe seeds of the beautiful plant named *Camoensia maxima* by its discoverer, Dr. Welwitsch. We saw it growing along the sides of the road as soon as we left the gneiss formation and entered on the mica slate; but more abundantly in the more bare places on the sides of the hills at Quiballa, in the very hard clay of the decomposed mica slate. The Camoensia grows as a hard, woody bush, with rather long straggling branches covered with fine large leaves and bearing bunches of flowers. Its roots spread underground to great distances and shoot out into other plants, so that on attempting to remove what we thought were nice small plants we always came to a great thick root, which we followed and found to proceed from old bushes at a considerable distance. Half a dozen of the seeds germinated on arrival at Kew Gardens, so that I hope this lovely flower will be shortly in cultivation, a welcome addition to our hothouses.' At Kew the plant behaves exactly as described in the above extract, the bed in which it is planted being a mass of woody roots whence numerous suckers spring. These, however, are not allowed to grow, the specimen being limited to about five stems, the thickest being now nearly 2 inches in diameter and very hard. The longest shoots are about 12 feet in length, and they are almost wholly clothed with bright-green trifoliate leaves. New shoots are developed freely all over the plant, and to keep it from becoming a thick tangle many of these are removed annually. It is planted in a hot, moist stove in a raised border of rich well-drained loamy soil, below which there are several hot-water pipes. The stems are trained on wires close to the roof of the house, which is somewhat flat and faces due south. During bright sunshine the house is shaded with an ordinary canvas blind. This plant has been in this position for about 10 years, and all sorts of experiments have been made to induce it to flower; but although it has always grown most vigorously, it has never shown any signs of flowering before this year. Plants tried in the large palm house and other tropical houses, including the succulent house, were not so successful. If planted in a suitable position in a tropical garden, this plant would soon cover an enormous area. We intend to put in cuttings of the branches which are now in flower, in the expectation that they will respond more readily to treatment for flowers than has been the case hitherto. It would be interesting to hear if the plants in Trinidad and Ceylon have flowered regularly since they first yielded. Probably the exceptional amount of bright sun-



THE ORANGE JESSAMINE (CHALCAS EXOTICA (L.) MILLSPAUGH) IN SOUTHERN FLORIDA (S. P. I. No. 40392).

A small tree or bushy shrub with fragrant white flowers and pointed red fruit a half inch in length. It is one of the most beautiful of all tropical shrubs for formal plantings, as attractive as box, but with the added beauty of exquisitely fragrant flowers and showy red fruit. It is a relative of Citrus, and lemons have been successfully budded on it as a stock. Its very vigorous root system makes it promising for stock purposes in certain regions. (Photographed at the Miami, Fla., Field Station, August 6, 1915; P34FS–m.)

A WEEPING FORM OF THE CHINESE ELM, ULMUS PUMILA L. (SEE S. P. I. No. 40507.)

The extreme hardiness of this Chinese elm, which has been widely distributed throughout our Northwestern States, will make this picturesque weeping form, which is a rare variety even in China, particularly welcome in that region for use in cemeteries and parks. The specimen shown was photographed by Mr. Frank N. Meyer on an old grave near Fengtai, Chihli, China, Mar. 27, 1908 (P5429FS).

shine enjoyed in this country during the early part of the past summer has a great deal to do with the flowering of the Camoensia." (*Gardeners' Chronicle, ser. 3, vol. 20, p. 597.*)

40392. CHALCAS EXOTICA (L.) Millspaugh. Rutaceæ. **Orange jessamine.**
(*Murraya exotica* L.)

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received April 7, 1915.

"The orange jessamine is commonly grown in greenhouses on account of its abundant and very fragrant flowers. These are often to be seen along with the mature red fruit, which make a striking contrast with the panicles of white flowers and delicate foliage. The root growth of this species is remarkably vigorous under greenhouse conditions. Lemons can be budded on it and make a rapid growth. It is being tested as a stock for the common citrus fruits in situations in which a vigorous root system is desired." (*W. T. Swingle.* In *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 729.*)

One of the most attractive of all shrubs for formal plantings in frostless regions.

For an illustration of the orange jessamine, see Plate I.

40393. ALEURITES FORDII Hemsley. Euphorbiaceæ. **Tung tree.**

From Experiment, Ga. Presented by Mr. H. P. Stuckey, horticulturist, Georgia Agricultural Experiment Station. Received April 6, 1915.

"From tree 8, row 10, of nut plat at the Georgia Agricultural Experiment Station. The fruit is of medium size and the tree fairly prolific." (*R. A. Young.*)

40394. JUGLANS REGIA L. Juglandaceæ. **Sorrento walnut.**

From Acireale, Sicily. Presented by Mr. L. Savastano, director, Royal Experiment Station. Received April 1, 1915.

"Cuttings from the true Sorrento walnut, collected on one of my properties, where they are the best walnuts, and from small trees." (*Savastano.*)

40395 to 40405.

From Biskra, Algeria. Presented by Mr. Bernard G. Johnson. Cuttings received April 2, 1915. Quoted notes by Mr. Johnson.

40395. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Orange.**

"Biskra blood orange."

40396 to 40405. OLEA EUROPAEA L. Oleaceæ. **Olive.**

"The first four specimens (S. P. I. Nos. 40396 to 40399) are probably the ones most accurate, although I hope they are all true to name. At Biskra, olives are hardly ever planted from cuttings, but spring up fortuitously from seeds and are then grafted or budded. At the Château Landon, at least, I was shown young trees that had been budded to *Zoragi.* I have seen numerous old trees where suckers had been permitted to grow to some size; such are called *Zaboosh.* I have given the Arabic way of writing, although the person that gave them to me was not educated. It is difficult to find learned people among the natives of Algeria. I have transcribed the names as they sound to me. Prof. Trabut says that 'all along the Mediterranean there are different varieties of olives every 50 miles,' so there is a good chance that *Tefahi, Zoragi,* and

40395 to 40405—Contd. (Quoted notes by Mr. B. G. Johnson.)

Boo Shookiya are original of Biskra. Prof. Trabut thinks the oil of *Zoragi* would be useful to blend with cottonseed oil."

40396. "No. 1. *Tefahi* (meaning apple). From the orchard of Amir Ali el Huni. This is the largest fruited of the olives grown at Biskra, but a light bearer."

40397. "No. 2. *Zoragi.* From the orchard of El Hadji Mohammed Ben, El Hadji Mohammed Brahim, who is kebir or village chief at Bab Dharb. This variety seems to be the most common at Biskra; probably 80 per cent or more of all the trees belong to it. Only trees of this variety attain very large size. The tree at M. Maljean's place was over 4 feet in diameter and apparently solid wood. It is a heavy bearer, and the fruit is quite large, though smaller than *Tefahi* (S. P. I. No. 40396). It is used for oil and pickling. Prof. Trabut says 'the oil of *Zoragi* is very thick and heavy and not much appreciated by the natives.' This fault can, however, be remedied by mixing with a lighter oil."

40398. "No. 3. *Tunisiya.* Probably introduced from Tunis. Specimens taken from the garden of Abd Rhozell Ben Babish. Tree grows more slender and taller, with lighter trunk. The fruit is smaller. I have seen but few trees of this variety. Makes a better oil but is a much inferior producer."

40399. "No. 4. *Boo Shookiya?* (Producer of spines; *Boo*, in Arabic, father or producer.) The specimens are from the orchard of El Hadji Mohammed Ben, El Hadji Mohammed Brahim. The main characteristic is that the wood suffers from a disease, and you will notice that nearly all *Boo Shookiya* have this trouble. The fruit is not so round as *Tefahi* or *Zoragi*, but more oval, and has a separate formation at one end resembling a spine, therefore the name. The fruit is used mostly for pickling. The variety is not so prevalent as *Zoragi*, but is quite common."

40400. "No. 5. *Zoragi.* From the orchard of M. Maljean. This tree was exceptionally large."

40401. "No. 6. *Tefahi.* From the property of Swedi Sheik Swedi."

40402. "No. 7. *Zoragi.* From the Château Landon. All the young trees there had been grafted to *Zoragi*."

40403. "No. 8. *Boo Shookiya.* From the property of El Hadji Jazeneb Medani. These specimens were apparently freer from the disease, but not the trees."

40404. "No. 9. *Tefahi.* From the property of El Hadji Boo Sitta."

40405. "No. 10. *Zoragi.* From the Babesh property (one of the richest in Biskra)."

40406 to 40496. Ribes spp. Grossulariaceæ.

From Paris, France. Purchased from Mr. Maurice Vilmorin. Cuttings received April 1, 1915. Secured for the use of the pathologists of the Bureau of Plant Industry in their studies of the relationships between this genus and the white-pine blister rust.

"Various species of Ribes and Pinus imported from other countries for the use of the Office of Forest Pathology have been secured for the purpose of carrying on

much-needed critical experimental work upon the white-pine blister rust. This disease attacks the 5-needled pines in one stage, and has as alternating hosts the various species of Ribes. The exact limitation of the disease upon the species of either of these genera is at present unknown. So far as tested all Ribes have taken the disease. The securing of results with the pines is much slower, but there is good reason to believe that all 5-needled pines will serve as hosts for the disease. Many foreign Ribes and pines are not available in this country from seeds, cuttings, or plants; hence the necessity of importing small numbers of them. This disease is so well established in one section of this country at present and threatens such tremendous timber values, both in the East and the West, that it is important that any resistant species of either pine or Ribes be known as soon as possible, with a view to the extensive use of this species in future in place of the more susceptible ones. For this reason an effort is being made to secure specimens of all foreign species of Ribes and 5-needled pines." (*Dr. Perley Spaulding.*)

Numbers quoted are those of the Maurice Vilmorin Fruticetum.

40406 to 40409. RIBES spp.

40406. "7378."

40407. "7402."

40408. "7488."

40409. "7530."

40410. RIBES MAXIMOWICZII Batalin.

"7555 V."

"(Wilson No. 958a.) From thickets, Washan, western Szechwan, altitude 1,800 to 2,500 meters. August, 1908." (*Wilson.*)

40411 to 40413. RIBES spp.

40411. "7555 F."

40412. "7555."

40413. "7477."

40414. RIBES AFFINE H. B. K.

"7472."

"Shrub 2 to 3 meters in height, young shoots glabrous or subpubescent, the year-old shoots shining, clear red-brown. Leaves rather small or medium, rounded, 6 cm. long and broad, 3 to 5 lobed, with lobes sometimes obtuse and little developed, base truncate or cordate, glabrous or subpubescent, even glandular above, subpubescent or pubescent below. Racemes very variable, short and rather crowded, medium or rather long up to 12 cm., in this case loose with about 15 flowers. Sometimes the racemes are branched and 20 cm. long (*R. multiflorum* Kunth). Flowers medium, subcampanulate, white or a little washed with rose, pubescent, not glandular, odorous. Fruit as large as a currant, round, black, shiny, covered with a withered flower, with regularly reflexed sepals. Pulp colorless, not juicy, containing 15 rather small ovoid or angular seeds. Native of Mexico in the high mountains in the Federal District and elsewhere. It bears in Mexico the name of *Ciruelillo*." (*E. Janczewski, Monographie des Groseilliers, p. 330.*)

40415. RIBES ALPESTRE COMMUNE Janczewski.

"7555 M–A."

"(Wilson No. 277 A.) From thickets, Fanghsien, western Hupeh, at altitudes of 2,100 to 2,250 meters. September, 1907." (*Wilson.*)

40406 to 40496—Continued.

40416 and 40417. RIBES ALPINUM L. **Alpine currant.**

40416. "7375."

"A deciduous unarmed shrub, reaching in gardens 6 to 9 feet in height and as much or more in diameter, of dense, close habit; young twigs shining, and at first more or less glandular. Leaves broadly ovate or roundish, 3 and sometimes 5 lobed, the lobes coarsely toothed, the base straight or heart shaped, with five radiating veins; upper surface with scattered bristly hairs, the longer one usually shining and more or less hairy on the veins; one-half to 1½ inches long and wide; stalk glandular-downy, one-fourth to one-half inch long. Flowers unisexual, the sexes nearly always on separate plants, produced in the axils of bracts longer than the flower stalk, greenish yellow; the males on small, erect, glandular racemes 1 to 1½ inches long, the females fewer and on racemes half as long. Currants red, not palatable. Native of the northern latitudes of the Old World, including England and Scotland. The largest specimens I know of form part of the old hedge on the east front terrace of the old hall at Troutbeck; according to a letter at Kew they are treelike, 15 feet high, and not less than 300 years old. Although this currant has no special beauty of flower or fruit, it makes a very neat and pleasing shrub, admirable for shady places. Occasionally plants with perfect flowers may be found." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 397.*)

40417. "7375 B." Var. *sterile.*

"The so-called var. *sterile* appears to be merely the normal male-flowered plant. None of the forms of *R. alpinum* need a rich soil. They retain the neat, compact habit, which is their greatest merit, in rather poor soil. The yellow-leaved forms color best in full sun." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398.*)

For further description, see S. P. I. No. 40416.

40418. RIBES AMERICANUM Miller. **Currant.**

"7345."

"This shrub is unarmed, and closely allied to the common black currant, which it resembles in having 3-lobed or 5-lobed leaves, with a coarse irregular toothing and a deeply heart-shaped base, and in possessing the same heavy odor, due to yellowish glands on the lower surface. The fruit also is black. The American species, however, is quite distinct in the flowers; these are nearly twice as long, more tapering and funnel shaped, and yellow. Moreover, the bract from the axil of which each flower springs on the raceme is longer than the stalk. (In *R. nigrum* it is small and much shorter than the flower stalks.) Native of eastern North America from New Brunswick to Virginia, Kentucky, etc.; introduced in 1729. As a garden shrub, the only quality which recommends this currant is that its foliage becomes suffused with brilliant hues of crimson and yellow in autumn. For this quality it is sold in nurseries, often as *R. missouriense*—wrongly, for the true plant of that name is a gooseberry with spiny branches." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398.*)

40406 to 40496—Continued.

40419. RIBES ROEZLI Regel. **Gooseberry.**

"7535." This species is described by Bean as *Ribes amictum.*

"A deciduous armed shrub, 3 to 6 feet high; young shoots downy. Leaves one-half to 1 inch wide, roundish or kidney shaped in general outline, 3 or 5 lobed, the lobes often with sharp teeth; more or less downy on both faces, especially beneath; stalk one-third inch long, usually downy and sometimes glandular-hairy. Flowers solitary or in pairs, on a short downy, often glandular stalk, pendent. Calyx purplish crimson, downy; the tube cylindrical, one-fourth inch long; the sepals one-third inch long; petals rosy white, erect, shorter than the sepals. Berry purple, one-half inch wide, covered with slender prickles. Native of California. This pretty and curious gooseberry is not common in cultivation, the plant that has been distributed for it from nurseries being as a rule either *R. lobbii* or *R. menziesii.* Its nearest ally is *R. cruentum.* The specific name (*amictum*) refers to the shape of the bract surrounding the base of each flower, which resembles the amict, or hood, worn by Roman Catholic clergy at mass." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398.*)

40420. × RIBES ARCUATUM Jancz. **Gooseberry.**

"7503."

"*Gracile* × *rotundifolium.* Shrub 1½ meters high with long, slender more or less arched branches, bristly, spines none, the nodal spines weak, up to 5 mm. long, wanting here and there. Leaves rather small, rounded, oblong, 3 to 5 lobed, up to 5 cm. in width, truncate or rounded at the base, subglabrous, resembling those of *R. rotundifolium.* Flowers pale, or a little washed with purple, glabrous, rather small. Fruit round, the size of a large currant, dark purple, with a light bloom, taste of that of *R. grossularia.* Ripens in the middle of July. Its habit, leaves, spines, as well as the shape of the flower, above all the petals, resemble very much *R. rotundifolium,* but it is even more vigorous and hardy, its racemes and stamens are even more short, the pollen compound, the fruit deep purple and not green. After repeated comparisons, we believe that it is a hybrid, *gracile* × *rotundifolium* and not *divaricatum* × *gracile* as we had previously thought." (*E. Janczewski, Monographie des Groseilliers, p. 497.*)

40421 and 40422. RIBES AUREUM Pursh. **Currant.**

40421. "7305. Var. *chrysococcum* Rydb."

The species is described as follows: "A deciduous, lax-habited, spineless shrub, 6 to 8 feet high, producing a crowded mass of stems which branch and arch outward at the top; young shoots minutely downy. Leaves usually 3 lobed, often broadly wedge shaped or palmate, the lobes coarsely toothed; three-fourths to 2 inches long, as much or more wide, pale green on both sides, and smooth, or soon becoming so; stalks smooth or downy, one-half to 2 inches long, very variable in length compared with the blade. Flowers spicily fragrant, bright golden yellow, appearing in April in semipendulous racemes 1 to 2 inches long, each flower with a tubular calyx one-half inch long; the spreading lobes one-fourth to three-eighths inch long; bract at the base of the flower stalk longer than the latter. Fruit

40406 to 40496—Continued.

black-purple, round, smooth, one-third inch in diameter. Native of the central United States; introduced in 1812. This species and *R. sanguineum* are by far the most attractive of the currants in their blossom, and it is very distinct among them in its long, tubular, yellow calyx." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 398–399.*)

The so-called variety *chrysococcum* is simply a yellow-fruited form.

40422. "7305." Typical *Ribes aureum.*

See S. P. I. No. 40421 for description.

40423. RIBES FASCICULATUM Siebold and Zuccarini.

"7540."

"A deciduous, unarmed shrub, 3 to 5 feet high; young shoots finely downy. Leaves 3 to 5 lobed, the largest 2 inches long, 2½ to 3 inches wide; the lobes coarsely toothed, usually more or less downy; stalk downy and with feathered bristles near the base. Flowers unisexual, the sexes on separate plants. Males clustered four to nine together in a stalkless umbel—i. e., each flower is on its own stalk without uniting on a common one—yellow, fragrant, smooth; females usually in pairs, sometimes three or four. Fruits erect on a stalk one-fifth inch long, round, one-third to one-half inch diameter, smooth, bright scarlet. Native of China, Japan, and Corea, and distinct from all other species in cultivation in having the flowers clustered in fascicles.

"Var. *chinense* Maximowicz (*R. billardii* Carr.) is a taller shrub, partially evergreen, more downy than the type. The fruits of both are ornamental, and remain long on the branches." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

40424. RIBES BUREJENSE F. Schmidt. **Gooseberry.**

"7532."

"A small shrub covered with copious fine prickles; blooms as early as *R. aciculare*. Leaves sparingly pilose, somewhat glandular-setaceous. Inflorescence pale or reddish. Calyx small, reflexed. Corolla white, triangular. Stamens longer than the corolla. Manchuria, northern Corea, northern China." (*C. K. Schneider, Handbuch der Laubholzkunde, vol. 2, p. 984, 1912.*)

40425. × RIBES CARRIEREI Schneider. **Black currant.**

"7358. *Glutinosum* var. *albidum* ♀ × *nigrum* ♂."

"Vigorous shrub, 1½ meters high, without the disagreeable odor of the black currant. Young shoots pubescent, rather large and stiff. Buds ovoid-oblong, of good size, but smaller than those of *R. glutinosum*, with herbaceous greenish scales a little touched with red. Leaves of medium size or rather large, up to 11 cm. long and 12 cm. wide, ordinarily trilobate, with the middle lobe usually as predominant as in the black currant, the base cordate, often asymmetrical, pubescent on the nerves and dotted below with small sessile glands. Leaves falling late. Racemes horizontal up to 8 cm. in length, loose, with 10 to 15 flowers. Buds almost red. Flowers medium, flesh colored, tomentose, and glandulose. Fruit round, as large as a currant, black, not pruinose, entirely similar to that of the black currant, which it also resembles in taste. Ripens in July and August. *R. carrierei* is a chance hybrid which was found among the seeds of *R. glutinosum* var. *albidum* by Billard at Fontenay aux Roses,

40406 to 40496—Continued.

and was named *R. intermedium* by Carrière in 1867. This name not being tenable because of the *R. intermedium* Tausch, 1838, Schneider changed it to *R. carrierei*. *R. carrierei* is intermediate between its parents. From *R. glutinosum* it draws the vigor, the size of the buds, the raceme, the bractlets, the forms and the coloring of the flowers and the small rounded glands; from *R. nigrum*, the form of the leaves, of the anthers, and of the pistil, as well as the fruits ripening rather early." (*E. Janczewski, Monographie des Groseilliers, p. 488.*)

40426. RIBES PETRAEUM CAUCASICUM (Bieberstein) Jancz. **Caucasian red currant.**

"7425."

"Shrub 1 to 3 meters, with young shoots almost always pale, usually glabrous, rarely dotted with glands or with glandular hairs. Buds a little larger than in *R. rubrum*, colored with dark brown already at the end of May, and easily distinguished at this time. Leaves usually rounded, up to 15 cm. long and broad, 3 to 5 lobed, rarely trifid, with lobes lengthened and subacute, or short and obtuse, with base truncate, subcordate or very deeply cordate, smooth or roughly rugose, glabrous, or subpubescent, even dotted with glandular hairs or subsessile glands, shiny or dull above, glabrous, subpubescent, or pubescent beneath. Flowers subcampanulate, whitish, salmon colored, or purple, glabrous, or subpubescent. Fruit more or less compressed at the ends like a bergamot pear, red or blackish purple crowned with a withered flower with circular insertion. Flesh juicy, colored, more or less acid, resembling a little the bilberry (*Vaccinium vitis-idaea*) in its taste. Ripens in July. Germination slow, in six to eight months. Native of the high mountains of Europe and North Africa (summit of the Atlas), and almost all of Siberia, even as far as the River Indigirka, perhaps even to the Okhotsk Sea. Inhabiting so great a space, *R. petraeum* presents varieties which are distinguished by their habit, foliage, racemes, color and form of flower, and coloring of the fruit. Among these is the variety *caucasicum*. Shoots glabrous or subglabrous. Leaves rounded, up to 13 cm. broad and 12 cm. long, ordinarily 5 lobed, the lobes little developed, subobtuse, with base very deeply cordate, smooth, subglabrous, or pubescent. Racemes sometimes lengthened, even up to 10 cm. Flowers reddish. Receptacle furnished with five tubercles below the petals. Fruits red or blackish purple. From the Caucasus." (*E. Janczewski, Monographie des Groseilliers, p. 290.*)

40427. RIBES CURVATUM Small. **Gooseberry.**

"7428."

"A low, deciduous, bushy shrub, less than 3 feet high; the shoots smooth, purplish, armed with slender, simple or triple spines. Leaves roundish, usually 1 inch or less in diameter, 3 to 5 lobed, toothed, slightly downy; stalk slender, downy. Flowers produced singly or in pairs (rarely more) on pendent stalks, white; calyx bell shaped with linear, much reflexed sepals one-fourth inch long; petals very short, white; ovary covered with resinous glands; stamens one-fourth inch long, erect, both they and the style downy. Fruits globose, smooth, one-third inch across, purplish. Native of the southeastern United States, apparently hardy. I brought plants from the Arnold Arboretum to Kew in July, 1910, which, so far as I am aware, were the first introduced into this country. It is closely allied

40406 to 40496—Continued.

to *R. niveum*, which it resembles in its white flowers and downy style and stamens, but the glandular ovary and often glabrous anthers are different. *R. curratum* is also much dwarfer in habit, and comes from the opposite side of North America." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

40428 to 40431. RIBES DIACANTHA Pallas.

40428. "7555 G."

"A deciduous shrub, 4 to 6 feet high, armed with spines in pairs one-eighth to one-fifth inch long, or sometimes unarmed; young shoots not downy. Leaves obovate or rounded; often 3 lobed and lobes coarsely toothed; three-fourths to 2 inches wide, the base ordinarily wedge shaped, but sometimes rounded, quite smooth; stalk one-fourth to five-eighths inch long, more or less furnished with bristles. Flowers unisexual, the sexes on different plants. Males yellowish, in erect glandular racemes. Fruit roundish, oval, about as big as a red currant, smooth, scarlet red. Native of Siberia, Manchuria, etc.; introduced in 1781. This shrub, which has no particular merit, resembles *R. alpinum* in the plant being one sexed, but differs in having prickles and in the markedly wedge-shaped leaves. In having spines, and flowers in racemes, it unites the characters of the currants and gooseberries, but its affinities are with the former." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401.*)

40429. "7385."

For description, see S. P. I. No. 40428.

40430. "7385 E. From Transbaikal."

For description, see S. P. I. No. 40428.

40431. "7385 ♂."

For description, see S. P. I. No. 40428.

40432 to 40434. RIBES FASCICULATUM Siebold and Zuccarini.

40432. "7370. Var. *chinense* ♀."

For description, see S. P. I. No. 40423.

40433. "7370 A. Var. *chinense* ♀."

For description, see S. P. I. No. 40423.

40434. "7370 B. Var. *chinense*."

For description, see S. P. I. No. 40423.

40435. RIBES AMERICANUM Miller.

"7348."

See S. P. I. No. 40418 for previous introduction and description.

40436. RIBES FRAGRANS Pallas.

"7340."

"Small shrub, from 50 to 70 cm. high, with young shoots richly glandular, glabrous, or pubescent. Plants very odorous, with an agreeable odor resembling that of balm (Pallas). Leaves leathery, rugose, rounded reniform, up to 5 cm. long and 6 cm. broad, trilobate, with lobes little pronounced, ovoid, or rounded, subcordate at the base, richly glandular, glabrous, or pubescent below. Flowers white, basin shaped, glandular, or pubescent. Fruit as large as a large currant, red according to Pallas, black according to Turczaninow, or whitish according to Bunge. Very

40406 to 40496—Continued.

tasty, according to Pallas. On the herbarium specimens we find it brownish and pale. Native of Siberia and northern Manchuria, on exposed rock in the sun or in the woodlands in the high mountains of Altai, Urugdei, Ssoyoutes Mountains and in the extreme east of Siberia up to the Okhotsk Sea. *R. fragrans* is a neighbor of *R. hudsonianum* and *R. dikuscha*, but it is well distinguished by the rounded kidney-shaped leaves, leathery and rugose; besides, it is an alpine or subalpine plant of small size and very odorous. Its variety with pubescent leaves has been described by Bunge under the name of *R. graveolens*. It is smaller in all its parts than the Pallas type." (*E. Janczewski, Monographie des Groscilliers, p. 343.*)

40437. RIBES BRACTEOSUM FUSCESCENS Jancz. **Black currant.**

"7336."

This species is described as follows: "An unarmed deciduous shrub 6 to 8 feet high; young shoots smooth, except for a little loose down at first. Leaves handsomely 5 or 7 lobed, 3 to 7 inches (sometimes more) wide; the lobes palmate, reaching half or more than half the way to the midrib, sharply and irregularly toothed; dotted with resin glands beneath; bright green and soon quite smooth above; stalk slender, often longer than the blade, smooth except for a few bristles at the base. Racemes produced in May, erect, slender, up to 8 inches long. Flowers numerous, greenish yellow, erect, one-third inch across, each on a slender, slightly downy stalk about one-fourth inch long. Currants erect, resin dotted, globose, one-third inch diameter, black with a blue-white bloom.

"Native of western North America; discovered by Douglas in 1826. An interesting species of the black currant (*nigrum*) group, very distinct in its large maplelike leaves (occasionally 10 inches across) and long, slender, erect racemes. Rarely seen but quite hardy at Kew." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 399.*)

40438. × RIBES FUTURUM Jancz. **Red currant.**

"7423. *Vulgare macrocarpum* ♀ × *warszewiczii* ♂."

"Robust shrub, young shoots stained with red, glabrous, sometimes dotted with a few glandular hairs. Leaves rather large, rounded, up to 11 cm. long and 12 cm. broad, 3 to 5 lobed, cordate at the base, subglabrous. Flowers almost rotate, pale, flesh colored or washed with brownish copper. Fruit rather large size, purple or deep red, subacid. Ripens at the end of June and in July. Insertion of the withered flower pentagonal. We have produced this hybrid by fertilizing in 1903 *R. vulgare macrocarpum* (Red Versailles currant) with *R. warszewiczii*. It is almost intermediate between the parents, but has drawn more from the mother in the form of the flower and the anthers, more from the father in the coloration of the flower and the nonlobed receptacle. The calloused swelling of the receptacle is completely intermediate in its form and its elevation." (*E. Janczewski, Monographie des Groseilliers, p. 478.*)

40439. RIBES GLACIALE Wallich. **Currant.**

"7380."

"Shrub from 3 to 5 meters, the young shoots red or washed with red, glabrous, or dotted with short hairs. Buds oblong, red or reddish in autumn. Development and flowering very early. Habit of *R. alpinum*. Leaves rather small, length and breadth up to 6 cm. rounded or ovoid, usually 3 to 5 lobed, the posterior lobes often very small, the middle one

40406 to 40496—Continued.

noticeably predominant, sometimes strongly pointed or almost acuminate with subcordate or truncate base, sometimes even rounded, a little glossy, glabrous, dotted with glandular hairs. Leaves but little developed at flowering. Male racemes erect, 1½ to 4½ cm. long, with from 7 to 30 flowers. Flowers subturbinate, purplish maroon on the inside, glabrous. Female racemes very short, one-half to 2 cm., loose, bearing three to six flowers in wild plants, 2 to 3 cm. long in cultivation, with about ten flowers. Pedicels very short at flowering. Bracts caducous. Flowers subrotate, smaller than the males, purplish or reddish maroon, sometimes greenish. Fruit small, like a currant, round or obovate, reddish scarlet, glabrous, occasionally shortly pedunculate (one-half mm.), crowned with withered flower. Pulp flesh colored, subacid or a little sweet, not gelatinous. Seeds rather small, oblong. Matures in middle July. Native of the high mountains of southern China, Yunnan, Hupeh, Szechwan, Tibet, and in the Himalayas. Wallich confused *R. glaciale* with *R. acuminatum*, but accepting the opinion of Govan that they are specifically distinct, I propose to apply the name *R. glaciale* to the plant having the smaller leaves more like those of *R. alpinum*. Hooker fil. and Thomson do the contrary, and describe *R. acuminatum* under the name of *R. glaciale*." (*E. Janczewski, Monographie des Groseilliers, p. 467.*)

40440. RIBES TRILOBUM Meyen.
(*Ribes gayanum* Spach.)

"7325. ♂."

"An unarmed evergreen shrub, 3 to 5 feet high; the young wood, leafstalks, flower stalks, ovary, and calyx shaggy with soft hairs. Leaves stout, greyish, very broadly or roundish ovate; 1 to 2 inches long and broad; the three lobes rounded and toothed, the base usually straight; downy on both sides. Flowers bell shaped, yellow, honey scented, closely packed in erect cylindrical racemes, 1 to 2 inches long, one-half inch diameter. Berries about the size of peas, purple-black, hairy. Native of Chile. A handsome evergreen and distinct in the shape and color of its inflorescence and the hairiness of its various parts. Some forms are less downy. Flowers in early June. It has been cultivated at Kew for many years and is quite hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 401–402.*)

40441. RIBES TRILOBUM Meyen.
(*Ribes gayanum* Spach.)

"7325. ♀."

See S. P. I. No. 40440 for description.

40442 and 40443. RIBES GLACIALE Wallich. **Currant.**

40442. "7380 ♀."

See S. P. I. No. 40439 for previous introduction and description.

40443. "7555 K."

"Wilson No. 180. From woods, Fanghsien, western Hupeh, at an altitude of 2,250 meters. September, 1907; a form with large sepals." (*Wilson.*)

See S. P. I. No. 40439 for previous introduction and description.

40444. × RIBES GORDONIANUM Lemaire. **Currant.**

"7362."

40406 to 40496—Continued.

"A hybrid between *R. aureum* and *R. sanguineum*, raised at Shrubland Park, near Ipswich, about 1837, by Donald Beaton, a famous gardener of his time. It is intermediate in most respects between its parents in habit, in the leaves being smaller and less hairy than those of *R. sanguineum*, and in the colour of the flowers, which are reddish outside, yellowish within, a curious blend. It is hardier than *R. sanguineum* and can be grown in parts of the New England States where that species is too tender to thrive. It is interesting and not without beauty, but is inferior to either of its parents." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40445. RIBES CYNOSBATI L. **Gooseberry.**

"7505."

"*Dogberry.* A native of eastern North America, introduced in 1759. Its stems are weakly armed or not at all; leaves and leafstalks downy, calyx green, bell shaped with reflexed sepals; petals white; ovary bristly, the bristles not gland tipped; style downy toward the base; fruit reddish purple, scarcely one-half inch in diameter, more or less covered with slender prickles." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40446. RIBES GROSSULARIOIDES Maxim. **Gooseberry.**

"7484."

"A native of China and Japan, with smooth or bristly stems armed with triple spines; leaves smooth or with glandular bristles. It differs from *R. grossularia* in the style not being downy and in the red berries being smooth. Introduced to Kew from North China by the late Dr. Bretschneider in 1881." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40447. RIBES HIMALAYENSE URCEOLATUM Jancz.

"7515 B."

"Wilson No. 4414. A bush 2 to 3 meters high, with black fruits from woodlands, Fanghsien, western Hupeh, altitudes, 2,300 to 2,600 meters. September, 1910." (*Wilson.*)

For a more complete description of the species, see S. P. I. No. 40448.

40448. RIBES HIMALAYENSE Decaisne.

"7515."

"Tall shrub 2 to 4 meters. Young shoots glabrous, a beautiful red in springtime (May and June). Buds, very small, lengthened. Vegetation and flowering very much later than in the currants of the gardens, contemporaneous with *R. petraeum* var. *bullatum*. Leaves rounded or ovoid, up to 12 cm. in length and breadth, lobed or more deeply cut, with lobes little developed and subobtuse, more often pointed, cordate at base, sometimes very deeply, dotted with glandular hairs above and rarely pubescent beneath. Flowers subcampanulate, or suburceolate, greenish, mottled with red or even purple on the outside, subglabrous or pubescent. Fruit rather large, red or black, insipid, oligospermous, crowned with a fleshy collaretie and with the withered flower. Seeds rather large. Native of the Chinese Empire from the Himalaya Mountains and those of Yunnan at the south as far as Shensi on the north. Always in the high mountains. We know three varieties of this species, var. *decaisnei* Jancz. Leaves with acute lobes, flowers with sepals exposed from the middle of their length, ciliate

40406 to 40496—Continued.

or not. They resemble those of *R. petraeum*. Native of the Himalayas, Hupeh, and Shensi. Var. *appendiculatum* Jancz. Leaves with short subobtuse lobes. Flowers similar, not ciliate. Anthers surmounted with a point prolonging the connective. We know this only from herbarium specimens collected in the Himalayas at Phulal Daru, Nila Valley. Var. *urceolatum* Jancz. Leaves acute lobed. Flowers with swollen receptacle, with short broad sepals, more or less divergent into a funnel, always ciliate. Native of Yunnan and Sikkim. Our plant is originally from Sikkim. The flowers are purple on the outside and pubescent." (*E. Janczewski, Monographie des Groseilliers, p. 296.*)

40449. RIBES HIRTELLUM Michx. **Gooseberry.**

"7485."

"This species is very near *R. oxyacanthoides*, but has smooth shoots and stamens twice as long as the petals, which are purplish. Berry smooth, purplish or black, one-half inch across.—Curtis's Botanical Magazine, pl. 6892 (as *oxyacanthoides*). It has borne very good fruit in the Isle of Wight, where it is known as 'currant gooseberry.'" (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40450. × RIBES HOLOSERICEUM Otto and Dietrich. **Currant.**

"7349."

"*Petraeum* var. *caucasicum* × *rubrum*. Erect shrub, 1 to 1½ meters, with robust shoots washed with red. Leaves medium size, rounded, 6½ cm. long, 7½ cm. broad, 3 lobed, more often sublobate, with lobes little developed, cordate base, subglabrous above, quite pubescent below. Flowers shortly campanulate, reddish, more often brownish, ciliate. Fertility sometimes little, sometimes great, according to the year. In some cases as many as 15 fruits in the raceme. Fruits small or medium in size, blackish purple, ordinarily compressed near the flower and in the form of a bergamot, surmounted by the withered flower with ovoid or pentagonal-rounded insertion. Pulp juicy, red, rather acid. Seeds few in number, purple. The second generation is heterogenous, composed of plants of which some resemble a little *R. vulgare*, others entirely resemble *R. rubrum*, which grew beside the mother plant and probably served to fertilize it. *R. holosericeum* (velvety currant) resembles in the richness of its racemes and the coloration of the flowers *R. petraeum*, but its receptacle, devoid of all excrescence, its straight filaments and the arch of the ovary little raised attest that *R. rubrum* entered into the crossing. The pubescence of the leaves, their cordate base, their slightly developed lobes, as well as the deep coloration of the fruits, seem to indicate that *R. petraeum* var. *caucasicum* with blackish fruits was one of its parents. In fact *R. holosericeum* is grown in some establishments under the name *R. caucasicum*." (*E. Janczewski, Monographie des Groseilliers, p. 483.*)

40451 and 40452. RIBES INEBRIANS Lindley.

40451. "7327."

"Very similar to *R. cereum*, and equally pleasing, this differs in having the bract at the base of each flower not toothed and pointed, the style smooth, and the flowers deeper in colour. Introduced from western North America in 1827." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 399–400.*)

40406 to 40496—Continued.

40452. "7327 B. Var. *minus*."

See S. P. I. No. 40451 for description.

40453. × RIBES INNOMINATUM Jancz.

"7491."

"*Divaricatum* × *grossularia*. More or less tall shrub. Shoots glabrous or pubescent; nodal spines simple or ternate, more or less vigorous, measuring up to 18 mm., setiform spines none or rare. Leaves almost small, subcoriaceous, rounded, 2½ cm. long and 3 cm. broad or larger, 3 to 5 lobed, the lobes little developed, obtuse, the base subcordate or truncate, glabrous or subpubescent. Flowers purplish maroon, bristly with stiff hairs. We have received two forms of this hybrid from the establishment of Monsieur M. Späth with the labels, *Ribes* sp. No. 3 and No. 1a. They differ from each other by their habit and above all by the pubescence. The form '*α*' is a more erect shrub with both shoots and ovary glabrous and certainly derived from *R. grossularia α vulgare*. The form '*β*' is on the contrary a more squatty shrub, with both shoots and ovary pubescent, and its fruits ripen later. It arises without doubt from *R. grossularia β uva crispa*. The intervention of *R. divaricatum* in the crossing is betrayed by the habit of the plant, above all by the form and coloration of the flower. Fruit of form '*α*' round, larger than a currant, purple, slightly pruinose, glabrous. Taste mild, resembling that of a gooseberry. Ripens middle decade in July. That of form '*β*' subglabrous, purple, ripening at the end of July." (*E. Janczewski, Monographie des Groseilliers, p. 496.*)

40454. × RIBES KOEHNEANUM Jancz. **Red currant.**

"7437. *Multiflorum* × *vulgare*."

"A shrub similar to other red currants in our gardens. Leaves medium sized, rounded, 6½ cm. long, 7½ cm. broad, 3 to 5 lobed, more often sublobed because the lobes are very little developed, obtuse, with cordate or subcordate base, subpubescent. Flowers small, basin shaped, brownish. Fruits very numerous, medium size, red, acid, ripening in the end of July. Insertion of the withered flower perfectly pentagonal, as in *R. vulgare*. *R. koehneanum* resembles *R. multiflorum* in the length and richness of racemes as well as in the length of stamen and style, and resembles *R. vulgare* in the form of the flower and the breadth of the anthers." (*E. Janczewski, Monographie des Groseilliers, p. 485.*)

40455. RIBES LACUSTRE (Pers.) Poiret.

"7400."

"A deciduous shrub, 3 to 5 feet high, the stem thickly covered with slender prickles or stiff bristles; spines at the joints numerous, from three to nine, arranged in a semicircle. Leaves 1 to 2¼ inches long and wide, handsomely and deeply 3 or 5 lobed, the lobes often again deeply cut; stalk and chief veins more or less bristly. Flowers from 12 to 20 in glandular-downy drooping racemes, 2 to 3 inches long, funnel shaped, with short, spreading sepals brownish crimson inside, creamy white or pinkish outside. Berry round, about the size of a black currant, covered with gland-tipped bristles, black. Native of North America, on both sides of the continent, inhabiting cold, damp localities; introduced in 1812. Although the general aspect of this shrub is that of a gooseberry, especially in the shape of its leaves and in its spines, it has the long

40406 to 40496—Continued.

racemes and flowers of the currants. Its multiple spines are also distinct. Although it has no lively color to recommend it, it is pretty when its branches are strung with the graceful drooping racemes." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40456. RIBES MONTIGENUM McClatchie.

"7553."

"Another species, which unites as *R. lacustre* does the two sections of the genus, but has shorter, fewer flowered racemes (six to ten) and bright red fruits. Introduced from western North America in 1905." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 403.*)

40457. RIBES LEPTANTHUM A. Gray. **Gooseberry.**

"7508."

"A deciduous, spiny shrub, 3 or 4 feet high, with slightly downy, occasionally glandular-bristly young branches; spines usually slender, solitary, up to one-half inch long. Leaves roundish or somewhat kidney shaped, one-fourth to three-fourths inch wide, deeply 3 or 5 lobed, toothed, the base mostly truncate; stalk as long as the blade, downy at the base. Flowers white, tinged with pink, one to three on a short stalk; calyx cylindrical, the sepals downy, ultimately reflexed. Fruit oval, shining, blackish red, slightly downy or smooth. Native of Colorado, New Mexico, etc.; one of the prettiest and daintiest of gooseberries lately introduced, the branches being slender and densely clothed with tiny leaves." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 404.*)

40458. RIBES LONGERACEMOSUM Franchet. **Currant.**

"7517."

"Mr. Wilson has recently introduced this extraordinary currant from western China, where it had originally been discovered by the Abbé David. The one character which distinguishes it from all its tribe is its remarkable racemes, from 12 to 18 inches long, pendulous, thinly set with greenish flowers and afterwards with jet-black fruits which Mr. Wilson tells me are about the size of an ordinary black currant and of good flavor. It is a deciduous unarmed shrub with smooth young shoots and 3 or 5 lobed, smooth leaves, 3 to 5½ inches long and wide; stalks up to 4½ inches long, furnished with glandular bristles most numerous toward each end. Flowers tubular, bell shaped, smooth. The species appears to be quite hardy and is worth the attention of lovers of curiosities and of fruit growers for hybridising. The fruits, however, are very thinly disposed along the stalk." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 404.*)

40459. RIBES LONGERACEMOSUM DAVIDII Jancz.

"7555 Y."

"Wilson No. 898. Woodlands, altitude 1,800 to 2,400 meters, Mupin, western Szechwan, June, 1908." (*E. H. Wilson.*)

40460. RIBES MANSHURICUM (Maxim.) Komarow. **Red currant.**

"7544."

"Shrub 1½ to 2 meters, with young shoots glabrous or subpubescent. Bark of the wild plants almost black, with leaden reflections. Buds ovoid, not larger than those of *R. petraeum*. Leaves large, broad, resembling those of *R. latifolium*, 9 cm. long, 11 cm. broad, usually 3 lobed, more

40406 to 40496—Continued.

rarely 5 lobed, with lobes often sharp, even acuminate, subcordate or cordate base, dull, glabrous, or pubescent below. Racemes pendent, up to 16 cm. long (in Shensi), even 20 cm. (according to Franchet), without appendages in the lower third, loose or crowded, bearing as many as 50 flowers. Flowers small, basin shaped, greenish, glabrous or subpubescent. Young fruit bluish green, fruit as large as a very large currant, red, subacid under cultivation, or strongly acid (according to David). Insertion of the dry flower 5 lobed. Seeds large, rounded; matures in mid-August. Native of northern China, Shensi, eastern Mongolia, Chihli, Korea, and in all of Manchuria down to the sea. In cool elevated valleys, and in more or less humid forests, Komarow distinguished two varieties: Var. *villosa* with leaves subpubescent above, tomentose below, with larger lobes. It lives in Shensi and Mongolia. Its racemes are very long and loose; var. *subglabrum*, with glabrous leaves, or a little pubescent on the nerves. Their lobes are habitually pointed, even acuminate. Racemes short, 3 to 8 cm., crowded, containing as many as 45 flowers. We have received this from some locality in eastern Manchuria (Ussuri). It also lives in Korea. *R. manshuricum* is a twin species of *R. multiflorum*, distinguished perfectly by the form of the leaves, by the less deeply split style, and the projections of the receptacle lower and not united by a distinct ring." (*E. Janczewski, Monographie de Groseilliers, p. 274.*)

40461. RIBES MEYERI Maxim.

"7433."

"Tall shrub, more than 1 meter. Young shoots washed with red, slender, glabrous. Buds lengthened, very small, as in *R. himalayense*. Developing very late, contemporaneous with *R. petraeum*. Leaves rounded, 9 cm. long and broad, almost always 5 lobed, with lobes subacute or obtuse, sometimes little developed, with cordate base, glabrous, more rarely dotted with glandular bristles above. Flowers small, subtubular, washed with reddish purple. Fruit round, black, shiny, crowned by the withered flower contracted into a wisp. Pulp juicy, deep purple, without pronounced flavor. Matures in the end of July and August. Germination slow, after seven months, rarely after three months. Native of the mountains of Central Asia from the Pamir as far as Sungaria. We know and cultivate two distinct varieties of this species, of which probably the first was known to Maximowicz: Var. *tanguticum* Jancz., with the leaves more or less acute lobed, dotted above with glandular bristles, from Tangout; var. *turkestanicum* Jancz., with leaves more or less obtuse lobed, glabrous above, from Turkestan and Sungaria." (*E. Janczewski, Monographie des Groseilliers, p. 297.*)

40462. RIBES MEYERI TURKESTANICUM Jancz.

"7412 B."

For description of this species, see S. P. I. No. 40461.

40463. RIBES MEYERI TANGUTICUM Jancz.

"7412."

For description of this species, see S. P. I. No. 40461.

40464. RIBES MOUPINENSE LAXIFLORUM Jancz.

"7555 Z."

40406 to 40496—Continued.

"Wilson No. 4212. A bush 2 to 3 meters high, with black fruits, from Mupin, western Szechwan, altitude 2,300 to 2,800 meters. October, 1910. (*E. H. Wilson.*)

40465. RIBES MOUPINENSE Franchet. **Currant.**

"7444."

"Shrub from 1 to 2 meters or more high (according to David), 2 to 5 meters (according to Delavay). Somewhat twisted branches, with young shoots glabrous. Leaves very variable, sometimes rounded, 5 lobed, with base deeply cordate (from Tibet), sometimes trifid, with lobes very sharp and acuminate, with base truncate or subcordate (from Yunnan, Hupeh, and Kansu), length in that case up to 14 cm. and breadth up to 16 cm., glabrous, dotted with glandular bristles above and on the nerve below. Flowers turbinate, greenish, red or washed with red, glabrous, subsessile. Fruits sessile, round, rather large for a currant, black (Delavay), glabrous, shining, crowned with fleshy collarette and the withered flower. Native of the high mountains of eastern Tibet, Provinces of Muping, Yunnan, Kansu, Shensi, and Hupeh. We do not know this species except from herbarium specimens, but believe that we have distinguished two sufficiently characteristic varieties, var. *lobatum*, with rounded leaves, lobed, with short thin racemes, native of eastern Tibet; var. *tripartitum* (Batalin) with tripartite leaves and medium-sized or lengthened racemes. It is a plant more widely spread, known from Kansu, Yunnan, Hupeh, and Shensi." (*E. Janczewski, Monographie des Groseilliers, p. 299.*)

40466. RIBES MULTIFLORUM Kit. **Red currant.**

"7435."

"This is one of the red-currant group, and, as regards its flowers, the most striking; they are yellowish green, crowded on slender, cylindrical, pendulous racemes, sometimes 4 to 5 inches long. When well furnished with these the shrub is quite ornamental. For the rest it is vigorous, up to 6 feet high, and has stout unarmed branches, stouter perhaps than those of any other currants; leaves of the red-currant shape and size, gray with down beneath. Fruit roundish, red when ripe, one-third inch diameter. Native of southern and eastern Europe; introduced about 1818." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

40467. RIBES NEVADENSE Kellogg. **Currant.**

"7361."

A shrubby wild western American currant with thin, 3 to 5 lobed leaves, green on both sides, spreading, nodding, or ascending racemes, usually 12 to 20 flowered; small flowers with the white petals softer than the rose-colored sepals; and subglobose, blue berries.

40468 and 40469. RIBES NIGRUM L. **Black currant.**

40468. "7350."

"An unarmed shrub, 5 to 6 feet high, distinguished by its peculiar odour, due to small yellowish glands sprinkled freely over the lower surface of the leaf, which is conspicuously 3 lobed, deeply notched at the base, long stalked, coarsely toothed. Flowers bell shaped, dull white, in racemes, each flower from the axil of a minute bract; fruit black. Native of Europe and Siberia, possibly of Britain.

40406 to 40496—Continued.

Several varieties of this species so well known as the 'black currant' of fruit gardens have been distinguished. The varieties *dissectum* and *laciniatum* are curious and interesting, but no others are worth cultivation as ornamental shrubs." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

40469. "7350 G. Var. *korolkowi*."

See S. P. I. No. 40468 for description.

40470. RIBES ORIENTALE Desf. **Currant.**

"7365."

"An unarmed deciduous shrub 5 or 6 feet high; young shoots and leaf-stalks covered with stiff gland-tipped sticky hairs. Leaves of the red-currant size and shape, but shining green and with bristly down on the nerves beneath; stalk one-half to 1 inch long. Flowers unisexual, the sexes on different plants, and produced on somewhat erect racemes 1 to 2 inches long; they are green suffused with red and covered with viscid hairs; berries red, downy. Native of eastern Europe and western Asia. The *R. resinosum* of Pursh, until recently regarded as a native of North America, and figured as such in Curtis's Botanical Magazine, pl. 1538, is really this species. It has little garden value, but is distinct in its unisexual flowers, very viscid glands, and erect racemes." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 406.*)

40471. RIBES OXYACANTHOIDES L. **Gooseberry.**

"7480."

"Is widely spread over North America. It has bristly branches, the leaves are downy, and more or less glandular, the stamens as long as the petals; the ovary, calyx, and berry smooth, the last red-purple." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40472 and 40473. RIBES PETRAEUM Wulf. **Red currant.**

40472. "7430."

"Another of the red-currant group, widely spread in a state of nature in Europe and North Africa. It has no value as an ornamental shrub, its flowers being green suffused with purple, somewhat bell shaped, in horizontal or slightly nodding racemes, 3 or 4 inches long. The leaves are more deeply lobed than in the common red currant, the lobes pointed. Fruit roundish, flattened somewhat at the end, red, very acid." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

40473. "7430 C. Var. *rigens*." **Red currant.**

See S. P. I. No. 40472 for description.

40474. RIBES PETRAEUM × MULTIFLORUM. **Red currant.**

"7545."

For a description of this species, see S. P. I. No. 40472.

40475. RIBES TRISTE Pallas.

"7440." This was received as *R. propinquum* Turcz.

40476. × RIBES ROBUSTUM Jancz. **Gooseberry.**

"7520."

"A hybrid between *R. niveum* and *R. oxyacanthoides*. It is a very vigorous bush and was received at Kew in 1890 from the late Mr. Nye-

40406 to 40496—Continued.

land, gardener to the King of Denmark. Beyond that, I know nothing of its origin." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 406.*)

40477. RIBES ROTUNDIFOLIUM Michx. **Gooseberry.**

"7500."

"A native of the eastern United States, from Massachusetts to North Carolina. Its solitary spines are small and inconspicuous; young wood and leaves downy, but not glandular or bristly; flowers greenish purple; calyx, ovary, and berry smooth. The fruit is purple and of good flavor." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol 2, p. 402.*)

40478. RIBES RUBRUM L. **Red currant.**

"7420."

"Found wild in Britain, is sometimes met with in gardens under the name of *R. schlechtendalii* Lange. Its racemes are horizontal or ascending, not drooping or pendent as in *vulgare*, and the flowers are urn shaped or broadly funnel shaped rather than saucer shaped. Cultivated forms of this species are grown in the gardens of Scandinavia, but in western and central Europe the cultivated red and white currants are exclusively *R. vulgare*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

40479 and 40480. RIBES SANGUINEUM Pursh. **Flowering currant.**

40479. "7360 B."

"A deciduous unarmed bush, 7 or 8 feet high, usually considerably more in diameter; young shoots covered with a close, fine down. Leaves 3 or 5 lobed, palmately veined, the lobes broad and rounded, unequally toothed, the base conspicuously heart shaped; 2 to 4 inches wide, less in length; smooth or nearly so above, soft with pale down beneath; stalks three-fourths to 2 inches long covered with minute down, like the young shoots, but with a few bristles near the base. Flowers deep rosy red, produced during April in drooping, finally ascending, racemes 2 to 4 inches long, 1 to 1½ inches wide; each flower one-half inch long and nearly as wide; the slender flower stalk, ovary, and tubular calyx dotted with glandular down. Currants globose, one-fourth inch diameter, glandular, black, covered with blue bloom. Native of western North America; discovered by A. Menzies in 1793 and introduced by Douglas for the Horticultural Society in 1826. This currant is the finest of Ribes and in the very front rank of all spring-flowering shrubs, being one of those that never fails to blossom well. Whilst all its forms are beautiful, some are preferable." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 407.*)

40480. "7360 J. Var. *intermedium*."

See S. P. I. No. 40479 for description.

40481. RIBES GLUTINOSUM Bentham. **Currant.**

"7360 I."

"This differs from *R. sanguineum* in the young shoots and leaves being furnished with glandular-glutinous hairs and in being less downy; also in its quite pendulous racemes. It is inferior in garden value. Native of California and Washington." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 408.*)

40406 to 40496—Continued.

40482. × RIBES SCHNEIDERI Maurer.

"7492."

"A hybrid between the black currant (male) and the gooseberry, raised in Germany." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 406.*)

40483. RIBES SPECIOSUM Pursh. **Gooseberry.**

"7460."

"A deciduous, spiny shrub, 6 to 9 feet high, the young shoots furnished with gland-tipped bristles. Leaves 3 lobed, sometimes 5 lobed, sparsely toothed, and from three-fourths to 1¼ inches long and wide, with smaller ones often obovate and tapered at the base; usually quite smooth; stalk slender, scarcely as long as the blade, with a few glandular bristles, especially at the base. Flowers rich red, usually two to five in pendulous clusters, the main stalk longer and less glandular than the minor ones. Calyx tubular, one-half inch long, glandular; sepals four, not reflexed; petals four, about as long as the sepals; stamens four, red, standing out three-fourths inch beyond the calyx. Fruit glandular bristly, red, one-half inch long, rarely seen in this country. Native of California; discovered by Menzies about 1793, and introduced from Monterey by a naval surgeon named Collie in 1828. As a flowering shrub it is the most beautiful of the gooseberries. Its branches are reddish, horizontal, or slightly dependent, and from their under side the richly coloured fuchsialike blossoms hang profusely in rows during April and May. It is very distinct in the parts of the flower, being in fours (not the usual fives) and in the very long highly coloured stamens. It is one of the earliest shrubs to break into leaf, often in early February. It shows to best advantage perhaps against a wall, where it will grow 10 or 12 feet high, but it is quite hardy in the open at Kew, where it has grown 6 or 7 feet high. It can be rooted from cuttings, but does not strike readily; layering is a more certain process." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 408.*)

40484. × RIBES SUCCIRUBRUM Zabel. **Gooseberry.**

"7507."

"*Niveum* ♀ × *divaricatum* ♂. Rather robust shrub, tall, with young shoots glabrous, armed with strong nodal spines, simple, more rarely ternate, up to 20 mm. long. Leaves rounded, up to 4 cm. long, 5 cm. wide, 3 to 5 lobed, with lobes little developed and obtuse, the base truncate or subcordate, dull, almost glabrous, similar to those of *R. niveum*. Flowers rose-carmine, pretty, resembling those of the parents in form and dimension. Fruit as large as a large currant, elliptical or rounded, black, lightly pruinose, juicy, subacid, edible, ripens in mid-July. Concerning the origin of this hybrid, perfectly intermediate between its parents, M. Zabel, of Gotha, wrote us in his letter of March 19, 1904: 'I have raised this *R. succirubrum* in 1888 from seeds of *R. niveum*, beside which grew *R. divaricatum*.' M. Zabel sent us branches and flowers of the hybrid and of its second generation which are absolutely identical. Here, then, is a new example of the constancy of hybrids between species which in no way follows the law of Mendel." (*E. Janczewski, Monographie des Groseilliers, p. 500.*)

40406 to 40496—Continued.

40485. RIBES STENOCARPUM Maxim. **Gooseberry.**

"7465."

"Shrub 1 to 2 meters high. Shoots vigorous, dotted or bristling with setiform spines, branches glabrous or bristly with similar spines. Nodal spines ternate, very vigorous, the middle one up to 23 mm. long in the more spiny plants; ternate or quinate and much smaller in the less spiny plants. Leaves small, 3½ cm. long, 4 cm. broad, 3 to 5 lobed or 3 to 5 cut, with lobes deeply incised, subcordate or cordate base, glabrous or pubescent, ordinarily dotted with glandular hairs. Flowers rather small, whitish or a little washed with red, glabrous or dotted with hairs, proterandrous. Fruit rather large, oblong, 20 to 25 mm. long, 8 to 10 mm. in diameter, glassy, colorless, finally washed with carmine, glabrous or dotted with glandular bristles, borne on a peduncle 4 or 5 mm. long, crowned by the withered flower contracted into a twisted wisp. The pericarp thick, acid, the seeds few in number. Ripens the end of July, but the fruit hangs till October. Native of northern China, in the mountains of Kansu and Shensi. The race with glabrous fruits was discovered in 1872 by Przewalski in Tangut, Province of Kansu; those with hispid fruits in 1894 by Father J. Giraldi in northern Shensi. The former only has been introduced into our gardens, where it succeeds very well." (*E. Janczewski, Monographie des Groseilliers, p. 374.*)

40486. RIBES AUREUM Pursh. **Buffalo currant.**

"7308. Var. *tenuiflorum* Jepson."

"This variety differs from *R. aureum* in having smaller flowers without fragrance and in the fruits being amber colored and translucent, with an acid flavor. It is also a taller shrub, up to 12 feet high. According to Dr. Coville, this is the true *R. aureum* of Pursh." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 399.*)

40487. RIBES TRISTE Pallas. **Red currant.**

"7438."

"The American form of red currant, a shrub of laxer habit than *R. vulgare*, the leaves white, with down beneath when young; flowers purplish; fruit red, small, and hard. It is said to be pretty and graceful in blossom in the United States and Canada, where it inhabits cold bogs and woods from New Hampshire to Nova Scotia. It is also native of northern Asia." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 409.*)

40488. RIBES USSURIENSE Jancz. **Black currant.**

"7353."

"Shrub 1 meter high, much branched, producing subterranean branches (rhizomes) like *R. aureum*. Young shoots subpubescent, dotted with rather numerous yellow glands. Buds whitish. Odor of the plant resembling camphor, not at all resembling the black currant. Leaves up to 8 cm. long and broad, 3 to 5 lobed, the middle lobe very predominant, rather acute, with cordate base, glabrous, not shiny, dotted below with yellow glands. Flowers briefly campanulate, whitish or a little yellowish, pubescent, glandular. Fruit round, as large as a currant, black (greenish blue before ripening), not aromatic, surmounted by a withered flower, the insertion of which is pentagonal rounded. Flesh greenish, slightly sweet subacid, seeds small, ovoid or oblong, with a gelatinous greenish

40406 to 40496—Continued.

coating, rather thick, with funicle very inflated, gelatinous. Ripens at the end of June. Fruit falls as soon as it is ripe. Germination more rapid than in other bisexual currants, in 22 to 50 days. Native of eastern Manchuria (Ussuri) in forests. *R. ussuriense* resembles in structure of its flowers the European black currant, rather than the Asiatic, but it differs so much in its aroma, its longer bracts, the color of its flowers, the exposed sepals, and by the production of subterranean branches, that we do not hesitate to consider it as a twin species and not as a simple variety of *R. nigrum*. We have received it from three locations in eastern Manchuria, and have grown seeds from Chabarowsk. The floral buds are very sensitive to winter cold. They were all frozen in the winter in 1904–1905, and almost all in 1905–1906–1907." (*E. Janczewski, Monographie des Groseilliers, p. 349.*)

40489. RIBES VALDIVIANUM Philippi.

"7525."

"Robust shrub, 3 meters high or more, with young shoots rather thin, very pubescent, dotted with yellow glands, year-old shoots dropping their outside bark like the red currant and becoming almost green. Leaves not leathery, almost all falling in autumn and winter, ovoid-rounded, 6 cm. long, 5½ cm. broad, 3 to 5 lobed, middle lobes strongly predominant, with truncate or subcordate base, cuneiform in the small leaves, pubescent in youth, finally glabrous above, dotted with yellow glands and pubescent on the nerves beneath. Male racemes arched, almost pendent, up to 7 cm. long, rather loose, or more crowded, bearing as high as 40 flowers. Sometimes the basal flower is replaced by a secondary raceme 3 cm. long, with 15 flowers. Flowers campanulate, with the five sepal nerves prominent, yellow, the base of the tube greenish, pubescent. Female racemes unknown. Fruiting racemes up to 9 cm. long, bearing up to 25 flowers, bracts persistent, reflexed, 5 mm. long. Pedicels 4 mm., pubescent. Bractlets none. Fruit oboval, 6 mm. long, 4 mm. broad (round and black according to Gay), pubescent, glandular, crowned with withered flowers contracted into a wisp. Native of the Province of Valdivia in Chile, where the shrub is called *Pulul* or *Parilla* and the fruit *Uvilla*. Philippi has already distinguished one variety, *sessiliflorum*, which is distinguished from the type by the long racemes, 4 to 10 cm. long, bearing 30 to 60 flowers, and by the subglabrous, subsessile flowers, dotted even on the teeth of the calyx with very numerous glands. It is found in Chiloe and even, according to Philippi, in the Province of Valdivia." (*E. Janczewski, Monographie des Groseilliers, p. 445.*)

40490. RIBES VELUTINUM × QUERCETORUM. **Gooseberry.**

"7518."

"*R. velutinum* Greene is a shrub 1 to 1½ mm. high, young shoots velvety, dotted with glandular bristles. Nodal spines simple or ternate, up to 18 mm. long, sometimes pubescent at the base. Leaves small, rounded reniform, 8 to 30 mm. long, 11 to 35 mm. broad, 3 to 5 lobed, or 3 to 5 fid, deeply dentate, the base truncate, similar to those of *R. microphyllum* and *R. leptanthum*, pubescent, often glandular. Flowers small, orange yellow, or white, velvety. Fruits small, purple-black, glabrous, pubescent or dotted with pediceled glands, crowned with withered flowers, fastened into a wisp. Seeds small. Germination in January and February, after

40406 to 40496—Continued.

2, 7, even 13 months. Native of California, Nevada, and Utah, in the mountains, 1,400 to 2,800 meters. Designated by different names or considered as a variety of *R. leptanthum* by its shorter style, by its nectariferous anthers, and by the pubescence of its leaves. *R. congdoni* (*R. quercetorum* Greene) with subglabrous ovary and glabrous fruit is considered a variety. It is a plant likewise from California, from Mariposa County, according to Heller, and from Kern County." (*E. Janczewski, Monographie des Groseilliers, p. 380.*)

40491. RIBES VIBURNIFOLIUM A. Gray.

"7498."

"An evergreen, unarmed shrub, 7 or 8 feet high against a wall, young shoots slightly downy at first, with numerous resin glands. Leaves ovate or oval, three-fourths to 1¾ inches long, one-half to 1¼ inches wide; rounded at the base, blunt at the apex, coarsely toothed, glossy and smooth above, almost or quite devoid of down beneath, but thickly sown with resin dots which emit a very pleasant turpentinelike odour when rubbed; stalk downy, one-eighth to one-sixth inch long. Flowers one-third inch across, produced in April in erect racemes about 1 inch long, terminating short, densely leafy shoots; dull rose coloured, the sepals spreading. Berry oval, red, one-third inch long. Native of Lower California and Santa Catalina Island; introduced to Kew in 1897. A remarkably distinct species, of little beauty, but interesting for its evergreen aromatically scented leaves. It needs wall protection at Kew." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 408*).

40492. RIBES TRILOBUM Meyen.
(*Ribes gayanum Spach.*)

"7328."

See S. P. I. No. 40440 for previous introduction and description.

40493. RIBES sp.

"7555 P. Vilmorin No. 5261."

40494. RIBES WATSONIANUM Koehne. **Gooseberry.**

"7450."

"Shrub little branched, with stiff shoots, pubescent, bristly with glandular bristles, without setiform spines, armed only with very short nodal spines, never more than 6 mm. long, usually ternate, rarely more numerous (5 to 7) and semiverticiliate. Glands secreting a yellow oily substance, soluble in alcohol. Vegetation and flowering very late. Buds ovoid, much larger than in neighboring species. Leaves small, rounded, rather pale green, 2½ to 6 mm. long, 3½ to 6½ cm. broad, 3 to 5 lobed, very deeply cut with lobes obtuse, base subcordate or cordate, pubescent and bristling with glandular hairs. Flowers medium sized, whitish or flesh colored, bristly with stiff hairs. Fruit pale, rather large, spherical, entirely bristly with rather long delicate spines. Flesh a little viscous, rather sweetish. Ripens the end of July and August. Native of the high mountains of northern California (Trinity Mountains, 2,700 meters), and of Oregon and Washington (Mount Paddo at 2,000 meters). *R. watsonianum* never produces scattered setiform spines, even on the most vigorous shoots." (*E. Janczewski, Monographie des Groseilliers, p. 368*).

40495. RIBES DIVARICATUM Dougl. **Gooseberry.**

"4795."

40406 to 40496—Continued.

"A native of the coast region of western North America, of vigorous growth, and up to 10 feet high. Its young wood is armed with single or triple spines up to two-thirds inch long and is sometimes bristly, usually smooth. Leaves with appressed hairs above, almost or quite smooth beneath. Calyx downy, greenish purple, petals whitish, ovary and berry smooth, the last globose, one-third inch diameter, black-purple. This species is nearly allied to *R. rotundifolium*, but is found wild on the opposite side of the continent, and is a bigger bush, well armed with long, stout spines." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 402.*)

40496. RIBES PETRAEUM Wulf. **Currant.**

"7430 B. Var. *opulifolium.*"

See S. P. I. No. 40472 for description of this species.

40497. PYRUS SALICIFOLIA Pall. Malaceæ. **Willow-leaved pear.**

From Novospasskoe, Russia. Presented by Mr. A. D. Woeikoff, director, Jardin Expérimental de l'École Horticulture, Cholmy. Received April 7, 1915.

"A tree, 15 to 25 feet high, branchlets covered with down, which is quite white when young. Leaves 1½ to 3½ inches long, one-third to two-thirds inch wide; narrowly lanceolate, tapering gradually toward both ends, covered when young on both sides with a beautiful silvery grey down; later in the year this falls away from the upper surface, leaving it shining green; margins quite entire; stalk one-half inch long or less, sometimes scarcely noticeable. Flowers pure white, about three-fourths inch across, produced in April, closely packed in small, rounded corymbs, the calyx and flower stalk covered with white wool. Fruit of the typical pear shape, 1 to 1¼ inches long and wide. Native of south-east Europe and Asia Minor. It is much the most ornamental of all true pears. Its leaves and flowers often open simultaneously, and it then presents a very charming picture, the willowlike leaves being of a conspicuous silky white. After the flowers fade the leaves remain silvery for some weeks, gradually, however, becoming greener on the upper surface. The fruit is harsh to the palate and of no value." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p 292.*)

40498 and 40499.

From Boscotrecase, near Naples, Italy. Presented by Dr. Gustav Eisen. Received April 8, 1915.

40498. PRUNUS DOMESTICA L. Amygdalaceæ. **Prune.**

"*Papagone.* I have not seen the fruit from this tree, but as the trees were growing in the garden of a friend of mine I have no doubt that his statement that the fruit was the best was true. The *Papagone* should do well in any climate similar to that of Naples." (*Eisen.*)

Cuttings.

40499. FICUS CARICA L. Moraceæ. **Fig.**

"*Troiaro.* This fig requires a much warmer climate, at least a more even climate, than that of Fresno, and I think should not be recommended to any locality north of Los Angeles. Where it does well it is a superior variety, preferable to the *White Adriatic*. It is the best table fig in Italy. Around San Francisco Bay this fig never matures. It is not affected by fall rains, like *Adriatic* and most other figs, and possesses

40498 and 40499—Continued.

advantages not found in any other fig ripening at the same time, September–October. I have not seen the fruit from this tree, but as the trees were growing in the garden of a friend of mine I have no doubt that his statement that the fruit was the very best was true." (*Eisen.*)

Cuttings.

40500 to 40505.

From Novospasskoe, Russia. Presented by Mr. A. D. Woeikoff, director, Jardin Expérimental de l'École Horticulture, Cholmy. Received April 7, 1915.

40500. PRUNUS CERASIFERA DIVARICATA (Ledeb.) Schneider. Amygdalaceæ. **Myrobalan.**

Forma *hortensis flava.* A yellow-flowered garden variety.

For previous introductions and description, see Nos. 37688 and 38157.

40501 and 40502. PRUNUS DOMESTICA L. Amygdalaceæ. **Plum.**

40501. "*Eschi.*" 40502. "*Ishopi.*"

40503. PRUNUS DOMESTICA INSITITIA (Jusl.) Schneid. Amygdalaceæ. **Bullace.**

"*Kanatsh-Tambul.*"

See S. P. I. No. 37619 for previous introduction and description.

40504. PRUNUS SIBIRICA L. Amygdalaceæ. **Siberian apricot.**

"A deciduous bush or small tree; leaves ovate, the apex long drawn out; 2 to 3½ inches long, half as wide, reddish at first, then bright green and smooth above, with axil tufts of down beneath; stalk one-half to 1 inch long. Flowers mostly solitary, white or pink. Fruit scarcely stalked, about 1 inch long, yellow, except on the sunny side, covered with a velvety skin; the flesh scanty, dry, harsh, and scarcely edible; kernel of the nut with an almondlike, bitter taste.

"Native of the mountains of southern Siberia, where, according to Pallas, the Russian botanist, some mountain sides are covered with its pink blossoms in May, when the northern sides are purple with *Rhododendron dauricum.* Although an old tree in gardens (it was cultivated at Kew 100 years ago) and still offered for sale by continental dealers, it is scarcely known in England nowadays. So far as I have seen, it has very little to recommend it for gardens, being of about the same value as the wild apricot, to which it is very closely allied. Its leaves have usually much more elongated points." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 253.*)

40505. PRUNUS SPINOSA MACROCARPA Wallroth. Amygdalaceæ. **Sloe.**

40506 to 40509.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 12, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

40506. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. (*Ziziphus sativa* Gaertn.) **Jujube.**

"(No. 1252. Near Pinchow, Shensi, China. January 20, 1915.) A local variety of jujube, having large and heavy fruits of elongated form; considered to be the second best jujube in China, the Paihsiangchen (Shansi) variety coming first (S. P. I. No. 38243). Color of fruits red-

40506 to 40509—Continued. (Quoted notes by Mr. F. N. Meyer.)

dish brown, meat quite solid and very sweet, size often as large as small hen's eggs. Trees of thrifty growth, assuming remarkably large dimensions for jujubes, trunks being seen 1½ feet in diameter. The trees are almost spineless when old and sucker but very little. Apparently not attacked by 'bunch disease,' although infected wild bushes were seen in close proximity. Propagated by suckers exclusively. The wood of this jujube is extensively used in the manufacture of combs and in all sorts of turnery work, this industry having its seat in and around the village of Tafutze. Chinese name *Chin tsao* and *Fei tsao*, meaning 'golden jujube' and 'fat jujube.'"

Cuttings.

40507. ULMUS PUMILA L. Ulmaceæ. **Elm.**

"(No. 1253. Peking, China. February 23, 1915.) Var. *pendula*. A weeping variety of the very drought-resistant North Chinese elm, not growing apparently to very large dimensions. Of value as a characteristic ornamental tree, especially fit for cemeteries and for parks in cold and semiarid sections. Shows up particularly well when planted on embankments alongside water expanses. Chinese name *Lung chao yü shu*, meaning 'dragon's-claw elm tree.' Obtained from the Botanical Garden at Peking."

Cuttings.

For an illustration of a weeping form of the Chinese elm (*Ulmus pumila*), see Plate II.

40508. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

"(No. 2179a. Sianfu, Shensi, China. January 25, 1915.) A large-fruited variety of Chinese chestnut, coming from Yatzeko, south of Sianfu, called *Qui li tzŭ*, meaning 'superior chestnut.' This variety is propagated by grafting. It seems on the whole somewhat more resistant to the bark disease (*Endothia parasitica*) than the ordinary strain of Chinese chestnut."

40509. CITRUS sp. Rutaceæ.

"(No. 2180a. Lanchowfu, Kansu, China. December 30, 1914.) A peculiar citrus fruit, of medium-large size, somewhat flattened, skin loose, wrinkled, and warty, of dark-orange color. Segments separating easily; flesh bitterish, but not disagreeably so. Said to come from Szechwan, which also means southern Shensi to ordinary people. Growing where tangerines also thrive. Chinese name *Kan tzŭ*."

40510. CYDONIA OBLONGA Miller. Malaceæ. **Quince.**
(*Pyrus cydonia* L.)

From Denton, Md. Presented by Mr. Samuel G. Bye, superintendent, estate of J. W. Kerr. Received April 13, 1915.

Scions of a large-fruited quince from the estate of J. W. Kerr, Denton, Md.

40511 to 40523.

From Groningen, Holland. Presented by the director, Botanic Garden. Received April 3, 1915.

40511 to 40513. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

Introduced for the work of the Insecticide and Fungicide Board, for studies in the production of pyrethrum powder.

40511 to 40523—Continued.

40511. CHRYSANTHEMUM CAUCASICUM Pers. **Chrysanthemum.**

A glabrous perennial chrysanthemum. Stems erect, simple or sparingly branched; leaves pinnately divided, leaflets linear-subulate; flower heads solitary, terminal; ray flowers white, disk yellow.

40512. CHRYSANTHEMUM COCCINEUM Willd. **Chrysanthemum.**

"Glabrous perennial 1 to 2 feet high; stem usually unbranched, rarely branched at the top; leaves thin, dark green, or in dried specimens dark brown; involucral scales with a brown margin; rays white or red, in such shades as pink, carmine, rose, lilac, and crimson, and sometimes tipped yellow, but never wholly yellow." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 757.*)

40513. CHRYSANTHEMUM CARINATUM Schousboe.

"Glabrous annual, 2 to 3 feet high; stem much branched; leaves rather fleshy, pinnatifid; flowers in solitary heads which are nearly 2 inches across, with typically white rays and a yellow ring at the base; involucral bracts carinate (keeled). The two colors, together with the dark-purple disk, gave rise to the name *tricolor*. The typical form, introduced into England from Morocco in 1798, was pictured in Curtis's Botanical Magazine, pl. 508, 1799. By 1856 signs of doubling appeared. In 1858 shades of red in the rays appeared in a strain introduced by F. K. Burridge, of Colchester, England, and known as *C. burridgeanum* Hort. (See Curtis's Botanical Magazine, pl. 5095, which shows a ring of red on the rays, adding a fourth color to this remarkably brilliant and varied flower, and Flore des Serres, vol. 13, pl. 1313, which also shows *C. venustum* Hort., in which the rays are entirely red, except the original yellow circle at the base.) *C. annulatum* Hort. is a name for the kinds with circular bands of red, maroon, or purple. *C. dunnetti* Hort. is another seed-grower's strain. There are full double forms in yellow margined red and white margined red, the flowers 3 inches across. The commonest and gaudiest of annual chrysanthemums, distinguished by the keeled or ridged scales of involucre and the dark purple disk." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 754.*)

40514 to 40520. IRIS spp. Iridaceæ. **Iris.**

Introduced for the use of the Office of Horticultural and Pomological Investigations in its landscape-gardening work.

40514 and 40515. IRIS HALOPHILA Pall. **Iris.**

40514. A small-flowered iris, 8 to 12 inches high.

"The color of the flower is variable and may be either white veined with yellow, a dull yellow, or some shade of gray purple." (*W. R. Dykes, The Genus Iris, p. 62.*)

Distribution.—Native of Asia, ranging from the Caucasus, through Persia to Afghanistan and the Northwest Frontier, Province of India.

40515. (No notes.)

40516. IRIS sp. **Iris.**

Received as *Iris mongolica* Fisch., for which name a place of publication has not been found.

40511 to 40523—Continued.

45017. IRIS MONNIERI DC. **Iris.**

A tall, slender iris, the native country of which is unknown, with narrow leaves (3 feet long and 1 to 1½ inches wide). Stems (3 to 4 feet) bearing one or more lateral clusters and a terminal head of 2 to 3 lemon-yellow flowers. (Adapted from *W. R. Dykes, The Genus Iris, p. 64.*)

40518. IRIS sp. **Iris.**

Received as *Iris spuria*, but seeds do not agree with other material of this species in the seed collection.

40519. IRIS SPURIA DESERTORUM Ker-Gawl. **Iris.**

Similar to *I. halophila*, but has lavender flowers.

"The plants grow quickly into close masses of foliage from which emerge numerous stems. The individual flowers are small, but they are produced so freely that the whole effect is ornamental. Cultivation is extremely easy, for the plants seem to succeed in any soil. Moreover, the flowers are self-fertilized and seed is produced in abundance." (*W. R. Dykes, The Genus Iris, p. 62.*)

40520. IRIS SQUALENS L. **Iris.**

A medium-sized iris from southern Europe of the general appearance of *I. germanica.*

"The falls are veined with yellow-white on a bluish ground. The standards and styles are of a dull yellow color." (*W. R. Dykes, The Genus Iris, p. 173.*)

40521 to 40523. OENOTHERA spp. Onagraceæ. **Evening primrose.**

40521. OENOTHERA BIENNIS L. 40523. OENOTHERA GLAUCA Michx.

40522. OENOTHERA FRUTICOSA L.

Introduced for the studies of Mr. H. H. Bartlett on the genus Oenothera and the mutations of the various species, as he wished to determine the plants grown at the various botanic gardens under the various names.

40524. COCCOTHRINAX ARGENTEA (Lodd.) Sargent. Phœnicaceæ.

(*Thrinax argentea* Lodd.) **Palm.**

From Cuba. Presented by Mr. Charles T. Simpson, Littleriver, Fla. Received March 25, 1915.

"The species from which this seed was taken is entirely different from anything I have seen in cultivation in Florida or elsewhere. The netted sheaths at the base of the leaves are striking, as they have very large, strong meshes. The tree grows in open savannas and in dry open forests. This palm is quite attractive, and I saw it in cultivation at the great hotel at Camaguey. A fine Thrinax with a stem diameter up to 4 or more inches and a height of 2 feet. The dark-green leaves are silvery beneath, their bases being beautifully netted. Grows in a variety of soils, in shade or sunshine." (*Simpson.*)

40525. ALLOGYNE CUNEIFORMIS (DC.) Lewton. Malvaceæ.

(*Fugosia cuneiformis* Benth.)

From Sharks Bay, western Australia. Presented by Mr. T. S. McNulty, Undersecretary for Agriculture and Industries, Perth, Western Australia. Received April 4, 1915.

"A rare and little-known West Australian species of Fugosia, a genus, as observed by Bentham and Hooker fil., very nearly allied on the one hand to Hibiscus, on the other to Gossypium; differing from the former chiefly in the style, from the latter in the bracteoles. The present species seems to have been discovered in Dirk Hartog's Island by Allan Cunningham, who gave it a manuscript name implying that it has a goatlike odour. Milne, during the voyage of Captain Denham in *H. M. S. Herald*, found it on the same island, and remarks that it is a seashore plant (as indeed might be expected from its very thick and fleshy leaves). A much-branching and very woody shrub, with copious oblanceolate or spatulate, rather than cuneiform, leaves, thick and fleshy, readily breaking off in a dry state. Flowers large, axillary, solitary; the peduncles clavate; the calyx leafy, downy; the petals broadly obovate, pure white, with a deep blood-coloured spot at the base. Anthers also blood coloured, beautifully arranged in whorls, as in the *Hibiscus huegelii;* and the style and stigma, erect and connivent, are the same as in *H. huegelii*, from which this seems hardly generically distinct." (*Curtis's Botanical Magazine, pl. 5413.*)

40526. Begonia socotrana Hook. f. Begoniaceæ. **Begonia.**

From Nancy, France. Presented by Messrs. V. Lemoine & Fils. Bulbs received April 14, 1915.

"It is necessary to keep the bulbs at rest during the summer, in pots, the soil not being absolutely dry; they will grow in autumn." (*Lemoine.*)

"A winter-flowering species; stems annual, stout, and succulent, forming at the base a number of closely set scales or suppressed leaves resembling bulbs; leaves dark green, orbicular, peltate, 4 to 7 inches across, center depressed, margin recurved, crenate, flowers all male except the terminal one of each branch of the cyme, in terminal few-flowered cymes, bright rose. Bulbs or semitubers were brought from the hot sandy island of Socotra by I. B. Balfour, and grown at Kew in 1880. This excellent plant requires to be grown in a light position in a stove to develop at its best. The bulbs should be shaken out of the old soil in September or October and potted up in a light soil, rich in humus, and placed in heat and moisture, and when well established should be liberally supplied with manure water. The flowers appear during the winter months, after which the plant dies down, forming a number of large resting buds or bulbs; the pots should then be placed in an intermediate temperature and be kept nearly dry until the following growing period comes round. On account of its habit of producing flowers in winter, this species has been largely used by the hybridist in the production of a race of winter-flowering begonias, of which there are many named varieties. Following are leading *socotrana* derivatives: *Gloire de Lorraine, Gloire de Sceaux, Triomphe de Lemoine, Incomparabilis.*" (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 473.*)

40527. Platanus orientalis L. Platanaceæ.

Oriental plane tree.

From Lahore, India. Presented by the superintendent, Government Agri-Horticultural Gardens. Received April 9, 1915.

See S. P. I. No. 34342 for previous introduction.

40528 to 40531. Aloe spp. Liliaceæ.

From Barberton, Transvaal. Presented by Mr. George Thorncroft. Received April 9, 1915.

40528 to 40531—Continued.

40528 and 40529. ALOE spp.

40528. "Unnamed species, stem 2 feet, foliage greenish gray. I have not yet seen this in flower, but it is quite different from any other." (*Thorncroft.*)

40529. "A new species, provisionally named *Aloe sessiliflora.* Flower stems 2 feet, plant 3 feet high, flowers close, compact to stem, color pale yellow. Habitat, rocky hillsides." (*Thorncroft.*)

40530. ALOE MARLOTHII A. Berger.

"An arborescent aloe often attaining a height of 10 feet, with extremely spiny leaves and horizontally spreading orange-red flowering spikes."

40531. ALOE sp.

"Stemless leaves in rosette, annually throws a flower stem, branching 7 feet high, flowers pink. The most beautiful Aloe I know." (*Thorncroft.*)

Received as *Aloe pretorensis,* for which name a place of publication has not been found.

40532. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. **Chinese knife bean.**

From Nanking, China. Presented by Mr. William Millward, University of Nanking. Received April 10, 1915.

"*Tao tou* (*Dao do*), Chinese knife bean."

40533. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ. **Loofah gourd.**

(*Luffa aegyptiaca* Mill.)

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received April 12, 1915.

"A climbing vine, not over delicate, which matures its fruit in about six months. If figuring on using for sponges, pick fruits when green, as sponge will be softer in that case." (*Mead.*)

40534. QUERCUS INSIGNIS Martens and Galleotti. Fagaceæ. **Oak.**

From Zacuapam, Huatusco, Vera Cruz, Mexico. Purchased from Dr. C. A. Purpus. Received April 13, 1915.

See S. P. I. No. 39723 for previous introduction and description.

40535. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. **Teff.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received April 14, 1915.

"For trial as a hay grass in Florida and other parts of the Southeast. Teff continues to be a standard hay crop here, and in spite of the fact that it has now been established in South Africa for several years, prices of teff hay on the Johannesburg market have again been ruling up to £4 10s. 0d. and £5 per ton. It is remarkable how well stock do on this grass, and the way in which its use has spread without any artificial boom proves clearly that it is a first-class thing." (*Davy.*)

40536 and 40537. Lathyrus spp. Fabaceæ.

From Ottawa, Canada. Presented by Dr. H. T. Güssow, Dominion Botanist, Central Experiment Farm. Received April 12, 1915.

40536. Lathyrus drummondi Hort. **Everlasting pea.**

This everlasting pea is similar to *L. rotundifolius*, but it is earlier, freer of bloom, more vigorous in growth, and sets its seed pods more abundantly. The flowers are of a bright orange-carmine tint. (Adapted from *Gardeners' Chronicle, July 4, 1896, p. 20.*)

40537. Lathyrus sylvestris L. **Everlasting pea.**

See S. P. I. Nos. 20776 and 32415 for previous introductions.

40538 to 40541. Orobanche spp. Orobanchaceæ.

From Cambridge, England. Presented by Dr. R. Irwin Lynch, Botanic Garden. Received April 12, 1915.

Introduced for the experiments of Mr. Orland E. White, assistant curator of plant breeding, Brooklyn Botanic Garden.

40538. Orobanche flava Martius.

"On *Petasites albus.*"

"A genus of singular-looking parasitic plants. All the species agree in having a dingy brownish yellow stem, which is leafless throughout, but furnished with numerous pointed scales, which take the place of leaves. The upper portion of the stem bears a spike of rather large flowers, of which the calyx is of the same russet hue as the stem; the corolla is 2 lipped, of a yellowish color tinged with pink or purple-blue and veined." (*Lindley, Treasury of Botany, vol. 2, p. 824.*)

40539. Orobanche lucorum A. Braun.

"On *Berberis vulgaris.*"

40540. Orobanche ramosa L.

"On hemp, *Cannabis sativa*, annual."

40541. Orobanche salviae Schultz.

"On *Salvia glutinosa.*"

40542 to 40548. Chrysanthemum spp. Asteraceæ.

From Nancy, France. Presented by Prof. Edmond Gain, director, Botanic Garden. Received April 14, 1915.

Introduced for the work of the Insecticide and Fungicide Board, for studies in the production of pyrethrum powder.

40542. Chrysanthemum anethifolium Brouss. **Marguerite.**

Perennial; rarer in cultivation than *C. frutescens*, from which it is distinguished by its glabrous hue and by the way in which the leaves are cut.

40543. Chrysanthemum balsamita L. **Costmary.**

"Tall and stout perennial; leaves sweet scented, oval or oblong, obtuse, margined with blunt or sharp teeth, lower ones petioled, upper ones almost sessile, the largest leaves 5 to 11 inches long, 1½ to 2 inches wide; pappus a short crown." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 757.*)

Distribution.—An herbaceous perennial found on the slopes of the mountains in Russian and Turkish Armenia.

40542 to 40548—Continued.

40544. CHRYSANTHEMUM CORYMBOSUM L. **Chrysanthemum.**

"Robust perennial, 1 to 4 feet, stem branched at the apex; leaves sometimes 6 inches long, 3 inches wide, widest at the middle and tapering both ways, cut to the very midrib, the segments alternating along the midrib. Flowers borne in dense flat-topped clusters; rays white." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 755.*)

Distribution.—An herbaceous perennial found in the meadows among mountains in southern Europe, western Asia, and northern Africa.

40545. CHRYSANTHEMUM PRAEALTUM Vent.

"The Caucasian form of *C. parthenium*, distinguished by more deeply cut leaves, longer peduncled heads, and rays longer than the disk rather than equaling it." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 756.*)

40546. CHRYSANTHEMUM SEGETUM L. **Corn marigold.**

"Annual, 1 to 1½ feet; leaves sparse, clasping, oblong to oblanceolate, variable, the lower petioled and the upper clasping, incisions coarse or fine, deep or shallow, but usually only coarsely serrate, with few and distant teeth, the lower ones less cut; bracts of involucre broad, obtuse; rays obovate and emarginate, golden yellow." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 754.*)

Distribution.—An herbaceous perennial found in fields in northwestern Europe.

40547. CHRYSANTHEMUM SEROTINUM L.

45048. CHRYSANTHEMUM VISCOSUM Desf.

"Annual; disk orange yellow, rays sulphur yellow. Mediterranean region." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 758.*)

40549. ORYZA SATIVA L. Poaceæ. **Rice.**

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American Consul-General. Received April 17, 1915.

"*Broussa* rice."

See S. P. I. No. 39545 for previous introduction and description.

40550. CHAETOSPERMUM GLUTINOSUM (Blanco) Swingle. Rutaceæ. **Tabog.**

From Manila, Philippine Islands. Presented by Mr. William S. Lyon. Received April 17, 1915.

"Since reading Mr. Swingle's monograph on Citropsis, I am prompted to ask if you know whether he has successfully worked any standard varieties of the orange on *Chaetospermum glutinosum* and if any tests have yet been made in growing under arid conditions. I think, but am not quite certain, that I wrote that this species occurs on well-drained gravelly hillsides where subjected to 70 inches of rain, practically all of which falls in 5 months, 2 to 4 inches being scattered over the remaining seven months in a few inconsequential showers. Even in the few years when the rainfall in the dry season exceeds this amount, it is, at best, absolutely a negligible quantity, for the reason that the prevailing hot, dry winds and unclouded sun will remove every appreciable trace of moisture from the soil a few hours after a fall of a quarter to a half inch. On the other hand, I lost a row of about two dozen 3-year-old seedling tobug growing in undrained land which was nearly but not quite inundated

during a 10-days' storm in which we had nearly 2 feet of water fall. At the same time, adjacent rows of Mexican limes and sweet oranges in variety were hardly injured. Some of the water-logged tobug which I had dug up had for their size an extraordinary root system, and in porous land I am of the opinion would penetrate to a surprising depth." (*Lyon.*)

"The tabog is a rapid-growing tree when young, and in a warm greenhouse shows vigorous root growth. This species is being tested as a stock for use in commercial citriculture. Experiments have shown that oranges, lemons, grapefruits, and kumquats grow well when budded or grafted on young tabog plants." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 728.*)

40551 and 40552.

From Bogota, Colombia. Presented by Mr. Jorge Ancizar. Received April 16, 1915.

40551. DOLICHOLUS PHASEOLOIDES (Swartz) Kuntze. Fabaceæ. (*Rhynchosia phaseoloides* DC.)

"*Pionia.* A creeping plant. The seeds, which are red and black, taken in infusion and ground to a paste are good for epilepsy." (*Ancizar.*)

A twining, suffrutescent, high-climbing legume, with three ovate or ovate-rhomboid leaflets, numerous yellow-flowered racemes (with purple striate standards), and black seeds with a scarlet-yellow ring around the hilum. (Adapted from *Griseach, Flora of the West Indies, p. 190.*)

40552. PASSIFLORA QUADRANGULARIS L. Passifloraceæ. **Passion fruit.**

"*Badea.* It is a creeping plant and gives a great fruit, five pounds, of fine flavor." (*Ancizar.*)

"A strong, quick-growing climber, with large oval leaves and a square stem, native of tropical America. Its large, oblong, greenish yellow fruit is not unlike a short and thick vegetable marrow, and contains in its hollow center a mass of purple, sweet-acid pulp mixed with the flat seeds. In the unripe state the succulent portion of the fruit may be boiled and used as a vegetable. The root is usually swollen and fleshy, and is sometimes eaten like a yam. The flowers are generally fertilized by insects, but these should be aided by artificial fertilization by hand, so as to ensure a larger crop of fruit. When the fruit is over, the shoots should be well cut back, retaining little but the stem. The plant is propagated by either seed or cuttings, and thrives up to about 3,000 feet in Ceylon. It should be trained over a trelliswork or fence, or allowed to climb a tree with low-spreading branches." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

For an illustration of the fruit of *Passiflora quadrangularis,* see Plate III.

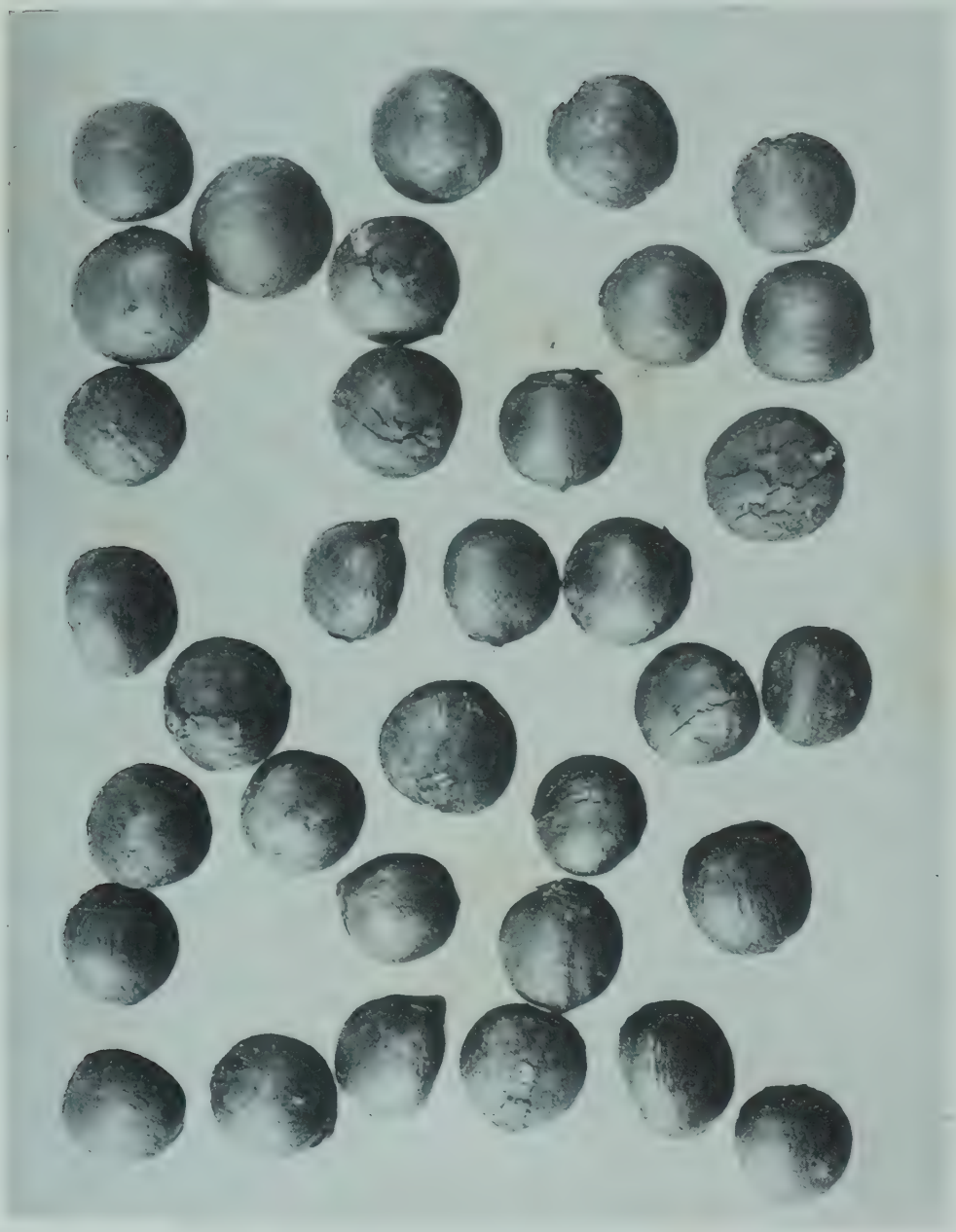
40553. GARCINIA LOUREIRI Pierre. Clusiaceæ.

From Buitenzorg, Java. Presented by the director of the Botanic Garden. Received May 5, 1915.

Buanha. A tree 40 to 60 feet high, with opposite branches and coriaceous, nearly oblong leaves, 3 to 6 inches long. The younger branches are nearly square, but soon become cylindrical. Flowers inconspicuous. Fruit ovoid, 1½ inches long, acidulous, edible. Introduced as a possible stock for the mangosteen. Cultivated throughout the Provinces of lower Cochin China and Cambodia. (Adapted from *Pierre, Flore Forestière de la Cochin Chine.*)

THE GRANADILLA, PASSIFLORA QUADRANGULARIS L., IN HAWAII (S. P. I. No. 40552).

One of the tropical passifloras as it appears in Hawaii. It is related to the maypop, which grows like a weed on the dry, thin soils of our Southern States, and hybrids between these two species ought to be attempted. This vine is climbing to a considerable height over a tree of the kukui (*Aleurites moluccana* Willd.) in a ravine at Robinson Station. The fruits weigh from 4 to 6 pounds each and the pulp is of delicious flavor. The thick, fleshy rind of this specimen was more or less infested with what was said to be the melon fly, a relative of the Mediterranean fruit fly. (Photographed by Mr. R. A. Young, Aug. 14, 1913; P11877FS.)



SEEDS OF THE OIL KIRI, OR KIRI OIL TREE (ALEURITES CORDATA (THUNB.) MUELL. ARG.) OF JAPAN (S. P. I. No. 40673).

This species is quite distinct from the related tung-oil tree of central China, having much smaller seeds. The kiri oil tree is grown only in southern Japan, Formosa, and the coastal provinces of China. The seeds furnish a drying oil, similar to tung oil, which finds a similar use in the chemical industries. (Photographed by Mr. E. L. Crandall, March 26, 1909; P4589FS; natural size; S. P. I. No. 25080.)

40554 and 40555.

From Pacasmayo, Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received May 11, 1915. Quoted notes by Mr. Cook.

40554. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

"No. 31. This fruit was brought on board the steamer at Pacasmayo, Perú, March 25, 1915. It is heart shaped, 10 cm. long, nearly as broad, the surface appearing to be formed of large overlapping scales, each scale with a distinct rounded tubercle near the lower end. Scales attain a length of about 2 cm. and a width of 1.5 cm., the tubercles 3 to 5 mm. broad. In texture the skin is rather tough and leathery, the surface finely wrinkled and hairy. Seeds large, 1.8 cm. long by 1.2 cm. broad, the surface wrinkled and of rather irregular shape, with prominent margins, the epidermis of the fresh seeds loosening in irregular bands, like leaf-miner burrows on leaves."

40555. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn.)

"No. 32. An avocado brought on board the steamer at Pacasmayo, Peru, March 25, 1915. It evidently belongs to the so-called West Indian type, with soft, flexible skin, but in this sort rather firm, so that it is possible to take out the flesh with a spoon. Shape distinctly pearlike, 12 cm. by 8 cm. Skin light green, about 2 mm. thick, the surface nearly smooth, shining, sprinkled with minute whitish points. Flesh rather pale, with no discolored fibers, rather soft and delicate in texture, not nearly so firm as in the Guatemalan hard-shelled type. Seed 7 cm. by 5.5 cm., with a strong hard beak above and a distinct broad hollow at the base. Seed coats fitting closely, distinctly mottled with dark and light brown when newly cleaned. Although the seed is not loose in a cavity, as in many of the West Indian avocados, it is very heavy and would probably bruise the neighboring tissues if the fruits were handled carelessly after the flesh begins to soften."

40556 to 40558. LYCOPERSICON ESCULENTUM Miller. Solanaceæ. **Tomato.**

From Paris, France. Purchased from Messrs. Vilmorin-Andrieux & Co. Quoted notes from their catalogue. Received April 19, 1915.

40556. "*Reine des Hâtives* (Queen of the Earlies). Smooth, exceptionally early, hardy, and resistant to disease."

40557. "*Tres hâtive de pleine terre* (open air, very early). Hardy and resistant to disease. Very highly esteemed for exportation."

40558. "*Merveille des Marchés* (Marvel of the Markets). Productive variety, very resistant to disease. Fruits of a beautiful live red, very smooth, not splitting at all."

40559. CANARIUM OVATUM Engler. Balsameaceæ. **Pili nut.**

From California. Presented by Mr. F. O. Popenoe, West India Gardens, Altadena, Cal. Received April 20, 1915.

"Pili nuts, bought in Los Angeles market at 12½ cents per pound." (*Popenoe.*)

40560. Swietenia mahagoni Jacq. Meliaceæ. **Mahogany.**

From Elliotts Key, Fla. Presented by Dr. John Gifford, Cocoanut Grove, Fla. Received April 19, 1915.

"Seeds from a tree on Elliotts Key. I thought it of special interest, because it is the seed of the true mahogany from a native tree of Florida. Just now the seed is scarce, but at times a wagonload of the capsules could be obtained, since the tree is quite common on the keys and lower mainland of this State. It is called *Madeira* here, and many persist in the foolish belief that it is not the true mahogany of commerce." (*Gifford.*)

See S. P. I. Nos. 10409, 34668, and 36170 for previous introductions and description.

40561 to 40600.

From Elstree, Herts, England. Presented by Mr. Vicary Gibbs, Aldenham House Gardens. Plants received April 22, 1915.

40561. (Undetermined.) Received as *Viburnum acerifolium*, but apparently it is not a Viburnum.

40562 and 40563. Berberis spp. Berberidaceæ. **Barberry.**

40562. Berberis brachypoda Maxim.

"A scarlet-fruited western Chinese bush up to 2 meters in height. Inflorescence sometimes somewhat paniculate near the base. Fruits elliptic, up to 11 mm. long and 6 mm. across, with a sessile stigma." (*Sargent, Plantae Wilsonianae, vol. 1, p. 375.*)

40563. Berberis subcaulialata C. K. Schneider.

"This species belongs to the same group as *B. stapfiana* (S. P. I. Nos. 37975 and 40150), but it has globose fruits ripe in November, more distinctly angled branchlets, and larger leaves; the general aspect is otherwise very similar." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 249.*)

40564 and 40565. Betula spp. Betulaceæ. **Birch.**

40564. Betula japonica mandshurica (Regel) Winkler.

"Wilson No. 4088. A gray-barked tree 10 to 25 meters tall, in girth 1.5 to 2.4 meters, from Chetoshan, west of Tachienlu, western Szechwan, at altitudes of 2,800 to 3,700 meters, September, 1910." (*Sargent, Plantae Wilsonianae, vol. 2, p. 461.*)

40565. Betula occidentalis Hooker.

"There is a good deal of confusion in regard to this tree, and it has been called *B. occidentalis* (Sargent); *B. papyrifera* var. *lyalliana* (Koehne); and *B. papyracea* var. *occidentalis* (Dippel). The name *occidentalis* was founded by the elder Hooker in 1839 on specimens of three distinct birches. As it might with equal propriety be given to any one of them, it is better to drop it altogether. *B. lyalliana* is one of the very finest of birches and reaches sometimes 120 feet in height; bark reddish brown to whitish, peeling. Young shoots warted, downy, yellowish brown. Leaves ovate with a rounded or heart-shaped base, ordinarily 3 to 4 inches long, but on young trees often over 5 inches long; hairy along the midrib and veins beneath; veins in 7 to 10 pairs. The tree is no doubt closely allied to the paper birch, but Sargent, who regards it as specifically distinct, distinguishes it by its downy, fruiting scales, its brown

40561 to 40600—Continued.

bark, its larger size, and bigger leaves. Trees introduced in recent years are growing admirably. A native of British Columbia and Washington, inhabiting moist situations. The tree recently put into cultivation as *B. macrophylla* is either this species or a form of *B. papyrifera*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 258,* under *Betula lyalliana.*)

40566. BUXUS HARLANDII Hance. Buxaceæ. **Box.**

"A dwarf evergreen bush of rounded compact habit, not likely, so far as one at present is able to judge, to get more than 2 or 3 feet high; shoots slender, mostly erect, slightly downy when young. Leaves standing erect, narrowly oblong or obovate, one-half to 1¼ inches long, one-eighth to three-eighths inch wide, tapering at the base, rounded at the apex, smooth. Native of China. This is one of the dwarfest of the boxes and somewhat similar to *B. sempervirens* var. *suffruticosa*, the 'Edging box,' but its leaves are longer. Its neat habit and slow growth make it useful in positions where a dwarf evergreen is needed which will not soon outgrow its space." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 277.*)

40567. CASSINIA LEPTOPHYLLA (Forst.) R. Brown. Asteraceæ.

"An evergreen, heathlike shrub, 4 feet or more high, with erect, slender branchlets, not viscid, but clothed with a dense grayish down. Leaves one-eighth to one-sixth inch long, one-twentieth to one-sixteenth inch wide, linear, or slightly wider toward the end; smooth, dark green above, covered beneath with white or yellowish down. Flower heads white, very small and numerous, forming terminal corymbs 1 to 2 inches across. Blossoms in August and September. Native of New Zealand; very similar to *C. fulvida*, but paler beneath the leaves. The whole plant has a whiter cast. It differs also in having the disk (or receptacle) on which the florets are borne, furnished with numerous scales; nor is it quite so hardy." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 304.*)

40568. CELASTRUS ACUMINATUS L. f. Celastraceæ.

"An unarmed shrub or small tree from 5 to 20 feet in height with trunk 7 to 18 inches in diameter. Wood very heavy, hard, strong, very close grained and compact, suitable for turners' work and engraving. This species is easily known from a curious peculiarity of the leaves and bark, which show numerous fine, white, silky threads when broken. From Natal and Cape Colony." (*Wood, Natal Plants, pl. 267.*)

40569. CELASTRUS ANGULATUS Maxim. Celastraceæ.

"A shrub 2 to 3 feet high or more, with long, trailing shoots. Leaves orbicular or elliptic, 4 to 7 inches across, deep green. Flowers inconspicuous. China." (*Kew Bulletin, 1910, p. 62.*)

40570. CLEMATIS TANGUTICA (Maxim.) Korsh. Ranunculaceæ. **Clematis.**

"A species closely allied to, or perhaps a variety of *C. orientalis*, growing 8 or 10 feet high; stems slightly downy. Leaves grey-green, like those of *C. orientalis*, but downy when young; leaflets raggedly toothed, and sometimes 2 or 3 lobed. Flowers rich yellow, solitary, on downy stalks 3 to 6 inches long; sepals nearly 2 inches long, narrowly

40561 to 40600—Continued.

ovate, long and slenderly pointed, downy outside and at the edges. Seed vessels crowned with long, feathered styles. Native of central Asia; introduced to Kew from St. Petersburg in 1898. It is the handsomest yellow-flowered clematis in cultivation, the finest flowers being about 4 inches across. It differs from *C. orientalis* in the larger flowers and in the downy stems, flower stalks, etc. It is a superior plant." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 367.*)

40571 and 40572. COTONEASTER sp. Malaceæ.

40571. "32 Forrest. A very handsome trailing bush."

40572. "33 Forrest."

40573. CONVOLVULUS CNEORUM L. Convolvulaceæ.

"An evergreen, very leafy shrub, 2 to 3 feet high, covered with silky hairs that give the entire younger part of the plant a beautiful silvery aspect. Leaves shortly stalked, alternate, narrowly oblong or oblanceolate, 1 to 2½ inches long, one-eighth to one-half inch wide, always tapered at the base, but either pointed or rounded at the apex. Flowers in a terminal umbel, but opening successively during the summer; they are of the trumpet-mouthed type common to 'morning-glory,' being 1¼ inches long, rather more across, of flimsy texture, white tinged with pink, yellow in the tube; calyx as long as the corolla tube, silky. Native of southern Europe; cultivated in England, according to Aiton, in 1640. It is not quite hardy near London except against a wall, but thrives in the south and west. There are five strips of silky hairs traversing the corolla lengthwise outside. It needs a dry sunny spot, and can be increased very readily by cuttings during the summer and placed in gentle heat." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 380.*)

40574 to 40579. COTONEASTER spp. Malaceæ. **Cotoneaster.**

40574. COTONEASTER DAMMERI RADICANS Schneider.

This variety differs from the typical form described under S. P. I. No. 40163 in its long peduncles and constantly one or two flowered racemes. The fruit is globose and bright scarlet, and the normal habit of this plant prostrate and rooting. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 176.*)

40575. COTONEASTER DIELSIANA Pritzel.

"A deciduous shrub, 8 feet, perhaps more, high, with long, extremely slender, arching or quite pendulous branches; branchlets downy when young. Leaves one-half to 1½ inches long, three-eighths to 1 inch wide, ovate; hairy above when young, covered beneath with felt, at first white, afterwards pale brown; veins prominent. Flowers 3 to 7 in a cluster, terminating side shoots 1 inch or so long; calyx and flower stalk hairy; calyx lobes shallowly triangular. Fruit scarlet, round or rather pear shaped, one-fourth inch long.

"Native of central China; introduced for Messrs. Veitch by Wilson in 1900. It flowers in June, and the fruit is in full color in September and October; it is then one of the most effective of Cotoneasters. The habit is singularly graceful, the long whiplike shoots spreading outward and downward in every direction. The name '*applanata*' refers to the distichous arrangement of the branches of young plants, which give them the appearance of a wall-trained tree." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408.*)

40561 to 40600—Continued.

40576. COTONEASTER DIELSIANA ELEGANS Rehder and Wilson.

This variety differs from the typical forms described under S. P. I. No. 40575 in its thinner, yet more persistent leaves, smaller pendulous brick or orange red fruit. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 166.*)

40577. COTONEASTER DIVARICATA Rehder and Wilson.

For previous introductions and description see S. P. I. Nos. 37596, 38149, and 40164.

40578. COTONEASTER SALICIFOLIA FLOCCOSA Rehder and Wilson.

"An evergreen shrub 6 to 12 feet high, the branchlets very slender, downy at first, but becoming smooth and of a dark reddish brown by the end of the season. Leaves leathery, lanceolate or narrowly ovate, wedge shaped at the base, tapering to a sharp point; three-fourths to 2½ inches long, one-fourth to three-fourths inch wide; the upper surface glossy green, wrinkled, not downy; the lower one covered at first with silky white floss, some of which falls away by the end of the year, showing the grey-white surface beneath; veins in 7 to 14 pairs; leafstalk about one-eighth inch long. Corymbs about 1 inch wide, carrying 9 to 15 flowers; stalks and calyx woolly, the teeth of the latter triangular. Fruit roundish, about one-fourth inch in diameter, bright red, containing usually three stones. Introduced by Wilson (No. 1133a) from western China in 1908, and again in 1910. A very graceful, distinct, and attractive evergreen, highly recommended by its collector for the beauty of its fruit." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40579. COTONEASTER SALICIFOLIA RUGOSA (Pritz.) Rehder and Wilson.

"In this variety the leaves are larger, up to 3 inches long and 1⅛ inches wide, the veins numbering 6 to 12 pairs. The fruit is coral red, larger than in var. *floccosa*, and contains usually two stones. The plant is more vigorous, coarser looking, and with bigger leaves than var. *floccosa*, but in many respects similar. Introduced by Wilson (No. 335) in 1907 from western Hupeh, where he found it 9 feet high." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 414.*)

40580. DEUTZIA SCHNEIDERIANA LAXIFLORA Rehder. Hydrangeaceæ.

Shrub 2 to 2½ m. high from western Hupeh, China. Leaves oblong-lanceolate, acuminate, base rounded or broadly wedge shaped, remotely and irregularly denticulate, 2 to 3 inches long and three-fifths to 1 inch broad, with sparse hairs above and densely hairy below. Inflorescence broadly paniculate. Differs from the type chiefly in the leaves being on their under side only sparingly stellate-pubescent and therefore green, and in the looser and broader panicles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 7–8.*)

40581. EUONYMUS RADICANS ACUTUS Rehder. Celastraceæ.

"This western Chinese variety resembles, in its climbing habit, *E. japonica radicans* Miquel [now called *E. radicans*], but is easily distinguished from this, as well as from the type, by the thinner, acute, or shortly acuminate leaves distinctly veined beneath. In typical *E. japonica* [*E. radicans*], the leaves are obtuse or obtusish, more coarsely

40561 to 40600—Continued.

and crenately serrate, and of thicker texture; the veins are not as distinct as in var. *acuta*, but more so than in var. *radicans*, where they are almost invisible." (*Sargent, Plantae Wilsonianae, vol. 1, p. 486.*)

40582. FRAXINUS PAXIANA Lingelsheim. Oleaceæ. **Ash.**

"(Wilson No. 4423.) Tree 22 m. tall, girth 2.6 m. From woodlands, Fanghsien, Hupeh, altitude 1,800 to 2,300 m.; October, 1910." (*Sargent, Plantae Wilsonianae, vol. 2, p. 259.*)

40583. FUCHSIA THYMIFOLIA H. B. K. Onagraceæ.

Received as *F. reflexa*, but later information gave the above name.

40584. HELIANTHEMUM TUBERARIA Mill. Cistaceæ.

"A handsome herbaceous perennial, with terminal racemes of bright-yellow flowers, 1 inch or more in diameter. Native of southern Europe and rather tender, but suffering more from too much moisture than from cold." (*Sweet's Cistineae, pl. 18.*)

40585. LONICERA HENRYI Hemsley. Caprifoliaceæ. **Honeysuckle.**

"An evergreen climber, with slender, very downy young shoots. Leaves oblong, with a lance-shaped apex and a rounded or heart-shaped base; 1½ to 4 inches long, three-fourths to 1½ inches wide; dark green above, paler and rather glossy beneath; downy only on the midrib and margins; stalk one-eighth to one-half inch long. Flowers purplish red, produced during June at the end of the shoot in a cluster 2 or 3 inches across; each stalk is twin flowered. Corolla 2-lipped, three-fourths inch across, the lips much reflexed, the tube about one-half inch long, hairy within, smooth outside; stamens slightly downy; style hairy, protruded one-half inch beyond the corolla; bracts awl shaped, about one-fourth inch long. Fruit blackish purple. Native of China and Tibet; introduced by Wilson in 1908, and first flowered at Nuneham in 1910. It is a free-growing climber of the same character as *L. japonica*, which is, however, very distinct in the big leaflike bracts. Botanically, it is more closely allied to *alseuosmoides* and *giraldii*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 45.*)

40586. OLEARIA TRAVERSII (Muell.) Hook. f. Asteraceæ.

"*Akeake*. A tree 20 to 30 feet high and sometimes 2 feet in diameter. This may be considered as the only valuable timber tree in the Chatham Islands, being durable and not subject to attacks of insects." (*Buchanan, Transactions and Proceedings of the New Zealand Institute, vol. 7, p. 337.*)

40587. OXYCOCCUS MACROCARPUS (Ait.) Pers. Vacciniaceæ. **Cranberry.**

40588. PHOTINIA VILLOSA (Thunb.) DC. Malaceæ.

"A deciduous shrub or small tree. Leaves obovate, or ovate-lanceolate, 1½ to 3½ inches long, three-fourths to 1½ inches wide; the apex drawn out into a long fine point, tapered at the base, finely and regularly toothed, each tooth gland tipped. Flowers white, in corymbs 1 inch long and 1½ inches wide, produced in May; stalks conspicuously warted; each flower about one-half inch in diameter. Fruit the size and shape of common haws, red. The foliage, too, is often a beautiful red in autumn. Native of Japan, China, and Corea. It is a variable plant, especially in the amount of down on the leaves, young shoots, and flower stalk. In the typical *villosa* the leaves are, as a rule, more obovate and all the younger parts of the plant hairy; the flower stalk is felted with grey down and

40561 to 40600—Continued.

the fruit is about one-third inch long." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 145.*)

40589. PIPTANTHUS CONCOLOR Harrow. Fabaceæ.

(Wilson No. 885.) From Tatsienlu, western Szechwan, China, occurring in thickets at an elevation of 2,300 to 3,500 meters.

40590. POTENTILLA FRUTICOSA L. Rosaceæ.

(Wilson No. 1213.) A common American shrub, much branched, up to 4 feet in height, with peculiar shreddy bark. The leaves are composed of three to seven leaflets, and the numerous showy bright-yellow flowers are up to 1⅓ inches in width and appear all through the summer. This shrub is also common on exposed rocky mountain slopes above 2,500 meters (8,125 feet) in western Szechwan and rarely in Hupeh, China. It is extremely variable in size of leaves and flowers and in the degree of hairiness. Wilson's No. 1213 was collected in October, 1910, at Mupin, western Szechwan, in thickets and rocky places. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, and *Sargent, Plantae Wilsonianae, vol. 2, part 2, p. 302.*)

40591. POTENTILLA FRUTICOSA ALBICANS Rehder and Wilson.

(Wilson No. 1213a.) This shrub differs from the species in the white tomentose under surface of the leaflets. The leaves are composed of five dull grayish green leaflets, and the bright-yellow flowers are about 2 cm. (four-fifths inch) wide. The foliage strongly resembles that of *P. fruticosa vilmoriniana*. Wilson No. 1213a was collected at Tatsienlu, western Szechwan, at altitudes of 3,300 to 4,000 meters (10,000 to 13,000 feet), November, 1908. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, part 2, p. 302.*)

40592. × MALUS ARNOLDIANA Rehder. Malaceæ. **Crab apple.**

"A plant which is evidently a hybrid of *M. floribunda* with one of the hybrids of *M. baccata* appeared spontaneously in the Arboretum several years ago and has been named *M. arnoldiana*. It has much larger pink flowers and larger fruit than *M. floribunda*, and in flower it is one of the most beautiful of all crab apples." (*Arnold Arboretum, Bulletin of Popular Information No. 39.*)

40593. RIBES LACUSTRE (Pers.) Poiret. Grossulariaceæ.

For previous introduction and description, see S. P. I. No. 40455.

40594. RUBUS GIRALDIANUS Focke. Rosaceæ.

"A vigorous, deciduous shrub up to 8 or 10 feet high; its biennial stems much branched toward the summit, pendulous at the end, covered with a vividly white waxy covering, not downy, armed rather sparsely with broad-based spines. Leaves pinnate, consisting of usually nine leaflets, and from 5 to 8 inches long; the main stalk downy and armed with hooked spines. Leaflets 1½ to 2½ inches long, three-fourths to 1¼ inches wide, the terminal one the largest; ovate or rather diamond shaped; lateral ones oval-lanceolate; all unequally and rather coarsely toothed, slender pointed, smooth above, white beneath, with a close felt. Inflorescence a terminal panicle; the flowers small and of little beauty, purple; fruit black.

"Native of China; first found in the Province of Shensi by Giraldi, later in Szechwan by Wilson, who introduced it in 1907. Its claims to recognition in the garden are its remarkably white stems, which are as

40561 to 40600—Continued.

striking in this respect as those of *R. biflorus*, and its pendulous branches, which give a remarkable fountainlike aspect to the shrub." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458.*)

40595. RUBUS IRENAEUS Focke. Rosaceæ.

"An evergreen prostrate shrub; stems round, slender, covered with a dense gray down, amidst which are set numerous small decurved prickles. Leaves roundish with a heart-shaped base and an abrupt, pointed apex; 6 inches or more across, margins toothed and bristly, sometimes obscurely lobed; upper surface smooth, dark green, lower one covered with a pale-brown felt and more or less hairy on the yellow veins; stalks 1½ to 3 inches long. Flowers white, produced singly or in pairs in the leaf axils and in a small terminal cluster. Fruit large, red.

"Native of central and western China; introduced about 1900 by Wilson for Messrs. Veitch. It is one of the most striking and remarkable of simple-leaved Rubi, the foliage being of a shape and size suggestive of a colt's-foot leaf, but having on the upper surface a curious metallic luster. Mr. Wilson informs me that it is common in woods up to 8,000 feet elevation, and will probably thrive best in partially shaded situations. It may prove of value as a handsome covering for semishaded slopes or wherever a low evergreen vegetation is desired." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 460.*)

40596. SENECIO GREYI Hook. f. Asteraceæ.

"Nearly allied to *S. laxifolius*. Grows well in the milder countries. This has larger, broader leaves than *S. laxifolius* and denser corymbs of flowers. From the North Island, New Zealand." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 508.*)

40597. SORBARIA ARBOREA Schneider. Rosaceae.

"Recently introduced from China by Wilson; is very closely allied to *lindleyana*. It is apparently the most treelike of the Spiraeas and is sometimes 30 feet high. From *lindleyana* it differs chiefly in the hairs beneath the leaf being clustered (not simple), and especially in the shorter calyx tube and longer stamens." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 538,* under *Spiraea arborea.*)

40598. VERONICA CATARACTAE Forster. Scrophulariaceæ.

"This species may be taken as a type of the semiherbaceous section of the genus. The flowers are one-half inch broad and very pretty, the petals being red, spotted with dark red at the entrance to the throat. Stems prostrate at the base and ascending. Leaves very variable, oval or oblong, one-half to 6 inches long, serrate. Racemes very slender, few flowered. Generally on deep rocks, and often cultivated, particularly around Dunedin." (*Laing and Blackwell, Plants of New Zealand, pp. 383–384.*)

40599. VIBURNUM VEITCHI C. H. Wright. Caprifoliaceæ.

"A deciduous shrub about 5 feet high; young branches, leafstalks, and under surface of the leaves densely clothed with stellate down. Leaves ovate, pointed, heart shaped at the base; 3 to 5 inches long, 2 to 3 inches wide; sharply and widely toothed; upper surface with scattered stellate down. Flowers white, uniform and perfect, one-fourth inch across; produced on a stoutly stalked, very scurfy-downy cyme that is 4 or 5 inches across. Fruit red, then black. Native of central China; discovered and introduced in 1901 by Wilson for Messrs. Veitch. It is one of the

40561 to 40600—Continued.

lantana group, differing from *V. lantana* itself in the more remote marginal teeth and in the calyx being felted with starlike down. Wilson found it as a shrub about 5 feet high, but rare; he considered it to be about the most ornamental of the *lantana* group." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 659.*)

40600. VITIS FLEXUOSA PARVIFOLIA (Roxb.) Gagnepain. Vitaceæ.

"A slender-stemmed, elegant climber, shoots smooth, or downy only when quite young. Leaves roundish ovate and heart shaped at the base, or triangular and truncate at the base, often contracted at the apex to a slender point, amongst the smallest in the genus, being ordinarily 2 to 3½ inches across, of thin, firm texture; smooth and glossy above, downy on the veins and in the vein axils beneath. Inflorescence slender, 2 to 6 inches long. Fruit about the size of a pea, black. Native of Japan, Corea, and China; long cultivated in gardens, but recently brought more prominently into notice by new forms introduced from China. It is a variable species, but the typical form is known by its quite small, unlobed (or indistinctly 3-lobed) leaves, smooth and very glossy above. Var. *wilsoni* Veitch has leaves rarely more than 3 inches long, scarcely as wide, deep lustrous bronzy green above, purple beneath when young. It is one of the most dainty in appearance of all vines. Introduced from central China by Wilson for Messrs. Veitch in 1900." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 670.*)

40601 and 40602.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received April 16, 1915. Quoted notes by Mr. Regnard, except as otherwise indicated.

40601. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"Var. *nana*. The size of the large fruits is nearly 1½ feet by 10 inches. The fruit is bright yellow when ripe, the skin is rough, and the taste sweet and flavor good. The male tree is dwarf like the female."

40602. SOLANUM MACRANTHUM Dunal. Solanaceæ.

"Ornamental tree, 40 feet high, native in Brazil."

The ample, alternate leaves, with acutely lobed margins, have prickly veins. These prickles become large and stout on the lower surface, especially on the midrib. The flowers, which occur in axillary racemes, are large and pale lilac in color, with darker dashes and pale lines. This tree has long been cultivated at the Royal Botanic Gardens, Kew. It is readily propagated from cuttings. (Adapted from *Curtis's Botanical Magazine, pl. 4138, 1845.*)

40603 to 40607.

From China. Presented by Mr. A. Sugden, Chefoo, China. Received April 20, 1915. Quoted notes by Mr. Sugden, except as otherwise indicated.

40603. BOMBAX MALABARICUM DC. Bombacaceæ.

"It may be tree cotton which has been used to pack something sent from Canton to Peking. It reminds me of the tree cotton of the South, so I have picked out the seeds and send them with a little cotton, as they appear to be ordinary style cotton seed, and we believe it to be some variety of wild cotton."

40603 to 40607. Continued. Quoted notes by Mr. A. Sugden.

40604. BRASSICA PEKINENSIS (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

"Shantung cabbage. It grows in the north of China, is lettuce shaped, and weighs from 5 to 8 pounds. When boiled it is nearly as good, if not quite, as sea kale; eaten raw, in salad, it is of so delicate a flavor that I know of no vegetable in England to approach it. It is an autumn cabbage, should be planted about 18 inches apart, thrives best with moisture, and in Shantung is well watered every day; there the seed is sown in June. When nearly full grown it should be tied round so as to give it a good white heart. If it can be acclimatized in this country it will be a great addition to our vegetables." (Extract from *George Hughes's letter to the Kew Royal Gardens, April 21, 1887.*)

40605. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Chinese haw.**

"*Suan cha* (*tza*). The fruit of this hawthorn is about as big as a damson and to my mind excellent as stewed fruit or as a cheese. To cook, simmer in hot water for a few minutes till soft enough to pull the skin off with the fingers; if cut off with a knife they say much of the coloring matter is lost; our cook then pokes the stones out through the top with a chopstick; they are then stewed for a few minutes with lots of sugar; the rough way of cooking is to cut in half to remove stones and not to peel. They look nicer the other way and the skin does not improve them for eating."

40606. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. **Chinese haw.**

"*Suan cha* (*tza*). Fruits larger than those of the preceding number [S. P. I. No. 40605], which see for description."

40607. SOLANUM sp. Solanaceæ.

"The pods were white, but turned yellow as they ripened; there was but a bit of leaf left, which looked something like a slender cabbage leaf."

40608. CANNABIS SATIVA L. Moraceæ. **Hemp.**

From Damascus, Syria. Presented by Mr. W. Stanley Hollis, American consul general, Beirut, Syria, who secured it from Consular Agent Young, Damascus. Received April 16, 1915.

"*Turkish hemp.* The seeds should be planted in well-irrigated or nearly marshy, rich ground and at the time of year that will favor the quickest growth, as, of course, the higher the shoots can be grown, the longer and better the fiber that will be produced." (*Young.*)

40609. OSTERDAMIA TENUIFOLIA (Trin.) Kuntze. Poaceæ. **Japanese lawn grass.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Plants received April 30, 1915.

"Birodoshiba."

40610 and 40611. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

From New Smyrna, Fla. Presented by Mr. John Y. Detwiler. Plants received May 1, 1915. Quoted notes by Mr. Detwiler.

40610. "Pink variety. Plants over a year old, which possibly by the inarching process can be made to bear earlier than usual. The largest fruits I have seen weighed 17½ ounces; they have been known to weigh 20 ounces."

40611. "Pure white variety."

40612. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Honolulu, Hawaii. Presented by the director, Experiment Station, Hawaiian Sugar Planters' Association. Cuttings received May 1, 1915.

Demerara 1135.

40613. DAPHNE BLAGAYANA Freyer. Thymeleaceæ.

From Chester, England. Purchased from Dicksons Seed Growers, seed merchants and nurserymen. Plants received May 6, 1915.

"Native of the mountains of eastern Europe, discovered by Count Blagay in 1837; introduced about 1875. This beautiful and sweet-scented Daphne has perhaps nowhere been so successfully cultivated as in the Glasnevin Botanic Gardens. It is there planted on low mounds composed of stones and loam from a granite district. The secret of success appears to be in the continuous layering of the shoots. As soon as the young growths are an inch or so long the previous summer's branches are weighed down to the ground by placing stones on them. A little soil may come between. By this system the whole plant is always renewing its root system at the younger parts. At Glasnevin I have seen a patch 8 feet across in the rudest health. This system is, no doubt, helped by the moist, equable climate of Dublin. As this shrub is found on calcareous rock, stones of the same character would appear to be preferable for layering, but Sir F. Moore tells me he does not consider this Daphne needs lime. He recommends good loam or peat and leaf soil and partial shade." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, pp. 467–468.*)

40614. SORBUS DOMESTICA L. Malaceæ.
(*Pyrus sorbus* Gaertn.)

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Garden. Cuttings received May 6, 1915.

See S. P. I. Nos. 10349 and 27184 for previous introductions and description.

40615 and 40616.

From Yachowfu, West China. Presented by Dr. E. T. Shields, Medical Missionary of the American Baptist Foreign Mission Society. Plants received May 12, 1915.

40615. (Undetermined.) **Mountain oak.**

40616. PHOEBE NANMU (Oliver) Gamble. Lauraceæ.
(*Machilus nanmu* Hemsl.) **Lanmu, or nanmu.**

"In western Hupeh and Szechwan the name *Nanmu shu* is applied to this and other species of Phoebe and to the genera Machilus and Actinodaphne. These trees are the source of '*nanmu*,' one of the most valuable of all Chinese timbers. All the species are evergreen and singularly handsome trees. In Szechwan they are abundant up to an altitude of 1,000 meters, often forming extensive woods. They are largely planted around homesteads and temples and are a prominent feature of the scenery of parts of the Chengtu Plain and of the region round the base of Mount Omei. These trees grow to a great size and have clean straight trunks and wide, umbrageous heads. The wood is close grained, fragrant, greenish white and brown in color, easily worked, and very durable. It is highly esteemed in furniture making and for pillars and beams in the temples and in the houses of the wealthy.

40615 and 40616—Continued.

In the form of planks it is used for the bottoms of boats." (*Sargent, Plantae Wilsonianae vol. 2, p. 71.*)

See S. P. I. Nos. 30039, 37944, and 38333 for previous introductions and description.

40617 to 40619.

From Formosa. Presented by the Bureau of Productive Industry, Taihoku, Formosa. Received May 12, 1915.

40617. ASPARAGUS LUCIDUS Lindley. Convallariaceæ. **Asparagus.**

From Mount Daiton, near Taihoku. Japanese name *Tenmondo.*

"*Kusasugi-kadsura* or *Tenmondo;* a perennial herb of the order of Liliaceæ, growing wild on seacoasts and also cultivated in fields. There are standing and climbing varieties. In summer it produces small yellowish flowers, which are succeeded by little red berries. The tuberous roots grow in tufts about the size of a finger, and are preserved in sugar or used for various cooking purposes after having been boiled in water to take away the acridity." (*Useful Plants of Japan, pp. 29 and 121.*)

Plants.

40618. CUDRANIA JAVANENSIS Trecul. Moraceæ.

From Mount Daiton, near Taihoku, April 9, 1915.

"*Kwakwatsu gayu*, an evergreen shrub of the order Urticaceæ, of a vinelike nature, provided with thorns on the stem, and found in the Provinces of Satsuma and Osumi. The barren and fertile flowers shoot separately on distinct plants. It bears flowers in summer and reddish yellow sweet fruits in winter. They are eaten fresh or preserved in sugar. The wood is used for dyeing yellow." (*Useful Plants of Japan, No. 2136.*)

Cuttings.

40619. MALUS FORMOSANA Kawakami and Koidz. Malaceæ.

"Japanese name *Taiwan-ringo.* From Arisan, March 20, 1915."

"This is a very distinct species, differing from all other [species of] Malus by the tubular constricted disk enclosing the connate base of the five styles. The large globose fruit with its impressed persistent calyx and short stalk resembles that of the common apple." (*Rehder, in Plantae Wilsonianae, vol. 2, p. 295, 1915.*)

"In November, 1905, on my exploring trip to Mount Niitaka, I chanced to discover the fruit of a very rare plant belonging to Pomaceæ at Mount Suizan, 7,000 feet high, in the southern part of the Arisan Range. As it resembled an apple in appearance, I tasted it, and found it somewhat like an apple but rather astringent, with a fine odor. Afterwards I was told that the aborigines usually eat them cooked. As the tree was 4 to 5 feet in circumference and 40 to 50 feet high, I was not able to pluck either the boughs or the leaves, and had to content myself with picking up the leaves and fruit lying about on the ground. In October of the following year I collected some of the same fruit again at Mount Arisan. At this time I found that the tree belonged to the genus of apple trees, but, being unable to obtain the flower, I could not properly specify it. In March of this year, however, Mr. Mori, of the Botanical Laboratory, succeeded in collecting the flower of this tree at a place

40617 to 40619—Continued.

7,000 feet high in Mount Gokwan, in the aboriginal district of Nanto. Some time afterwards Mr. Sasaki, my assistant, found the flower of the same tree in its later stage of bloom at Mount Bui, in the district of Ako. After having gathered all these facts together, I was at last enabled to solve this difficult problem, which had been taking my attention for a year. The plant in question is a species of wild apple tree, and is called *Sashibe* or *Sado* by the aborigines. According to Mr. Mori, '*Sashibe*' is the name given by the Bunun tribe and '*Sado*' is the one used by the Atayal tribe, living near Horisha. This plant is well known among the Formosan aborigines, so that their villages are often named after this plant. This plant is called '*Take sashibe*' in Ako district and '*Alan sad*' at Horisha, both '*take*' and '*alan*' signifying a tribe. It is said that among the aborigines of the Paiwan tribe of Taito district their villages are often named after this plant. The Chinese inhabitants, however, name it differently; at Ako it is called '*Shaburai*' and at Rinkiho '*Soan-sha*' [*Suan cha*, sour hawthorn?] The fruit is often pickled in salt and sold by Chinese grocery dealers in towns in the vicinity of the savage district. They cost on an average about 6 sens per dozen. I bought some of the fruit myself at Ako and Rinkiho. The seed of the fruit germinating very easily, it could, in my opinion, be successfully grafted with good European apples. This is, however, a practical question requiring an experiment. In April of this year I made a scientific research into the nature of the said plant, in collaboration with Mr. G. Koidzumi, of the Science College of the Tokyo Uuniversity, which resulted in our identifying it as a new species." (*Kawakami, Tokyo Botanical Magazine, vol. 25, p. 145–146, 1911.*)

40620 to 40622. PRUNUS spp. Amygdalaceæ.

From Sapporo, Japan. Presented by the director, Botanic Garden of the College of Agriculture, Tohoku Imperial University. Received May 3, 1915.

40620. PRUNUS NIPPONICA KURILENSIS (Miyabe) Wilson.

A small freely branching tree with reddish or grayish brown bark. Young leaves densely pubescent or pilose. Mature leaves pilose to sparsely hirsute or pubescent on the veins, obovate-subrhombic to ovate-elliptic; blade 4.5 to 8 cm. long, 3 to 4.5 cm. broad, acuminate. Flowers 1 to 3 fasciculate, earlier than the leaves. Petals broadly elliptic-obovate, tinged with rose color. Japan. (Adapted from *G. Koidzumi, Jour. Coll. Sci. Imp. Univ. Tokyo, vol. 34, art. 2, p. 284.*)

40621. PRUNUS MAXIMOWICZII Rupr. **Cherry.**

See S. P. I. No. 40189 for previous introduction and description.

40622. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*Prunus sargentii* Rehder.) **Sargent's cherry.**

Young leaves brownish. Stipules lanceolate 3 to 6 mm. long, laciniate. Flowers rose colored, umbellate-fasciculate, large, earlier than or appearing with the leaves. Bracts obovate-oblong, 3 to 6 mm. long, 2.5 to 3 mm. broad, margin fimbriate-denticulate. (Adapted from *G. Koidzumi, Jour. Coll. Sci. Imp. Univ. of Tokyo, vol. 34, art. 2, p. 276.*)

40623 to 40626.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received April 14, 1915.

40623. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. Amygdalaceæ. **Sargent's cherry.**
(*Prunus sargentii* Rehder.)

"The first of the Japanese cherries to flower is *Prunus sargentii*. This is a tall tree in the native forests of the northern island of Japan, where it is valued as a timber tree. There are six specimens of different sizes on the Forest Hill road, Arnold Arboretum, and they are now covered with clusters of large pink or rose-colored single flowers, for the color of the flowers of this tree varies considerably on different individuals. The small black fruits which ripen in June are almost hidden by the large dark-green leaves, which in the autumn turn to shades of orange and red; the smooth, shining, reddish bark adds to the beauty of this tree. Travelers who have seen cherry blossoms in many lands declare that *Prunus sargentii* should become a common tree if nurserymen will recognize its value and make a business of making it known to the public." (*Arnold Arboretum, Bulletin of Popular Information, No. 20.*)

Plants.

40624. VITIS VINIFERA L. Vitaceæ. **Peking grape.**

"The so-called Peking grape is a variety of *V. vinifera* which we received in April, 1904, from Mr. E. T. Williams, in Peking. The fruits are said to be black. At present we have no plants of it in the Arboretum." (*Rehder.*)

Rooted eyes.

40625. ROSA HUGONIS Hemsl. Rosaceæ. **Rose.**

"Grafted on the roots of *Rosa multiflora*." (*Jackson Dawson.*)

See S. P. I. No. 40192 for description, and the Journal of Heredity, vol. 6, p. 429, September, 1915, for description and illustrations.

Grafted plants and cuttings.

40626. ROSA MULTIFLORA Thunb. Rosaceæ. **Rose.**

"These roots are good for all varieties of roses." (*Jackson Dawson.*)

40627 to 40644. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received May 4, 1915.

Introduced for the work of the Insecticide and Fungicide Board, for studies in the production of pyrethrum powder.

40627. CHRYSANTHEMUM sp.

Received as *Chrysanthemum anserinaefolium* Hausskn. and Born., for which no place of publication has yet been found.

40628. CHRYSANTHEMUM BALSAMITA L.

See S. P. I. No. 40543 for previous introduction and description.

40629. CHRYSANTHEMUM BALSAMITA L.

Var. *tomentosa*.

40630. CHRYSANTHEMUM CAUCASICUM Pers.

See S. P. I. No. 40511 for previous introduction and description.

40627 to 40644—Continued.

40631. CHRYSANTHEMUM CINERARIAEFOLIUM (Trev.) Vis.

"Glaucous perennial, slender, 12 to 15 inches high; stems unbranched, with a few short, scattered hairs below the flower; leaves long-petioled, silky beneath, with distant segments; involucral scales scarious and whitish at the apex. Dalmatia. Said to be the chief source of Dalmatian insect powder. Rarely cultivated as a border plant. Common in botanic gardens." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 757.*)

40632. CHRYSANTHEMUM COCCINEUM Willd.

See S. P. I. Nos. 31103 and 40512 for previous introductions and description.

40633. CHRYSANTHEMUM CORONARIUM L.

"Annual, 3 to 4 feet; leaves bipinnately parted, somewhat clasping or eared at the base, glabrous, the segments closer together than in *C. carinatum;* involucral scales broad, scarious; rays lemon colored or nearly white. July to September. The full double forms, with rays reflexed and imbricated, are more popular than the single forms. This and *C. carinatum* are the common summer chrysanthemum. This is common in old gardens, and is also somewhat used for bedding and pot culture." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 754.*)

40634. CHRYSANTHEMUM CORYMBOSUM L.

40635. CHRYSANTHEMUM GRANDE (L.) Hook. f.

"Stout erect perennial of Algeria, 2 to 3 feet; leaves oblong to linear-oblong, often lyrate, coarsely toothed; flower heads large, solitary, rayless, golden yellow, to 2 inches across." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 758.*)

40636. CHRYSANTHEMUM sp.

Received as *Chrysanthemum haussknechtii*, the place of publication of which has not yet been found.

40637. CHRYSANTHEMUM LACUSTRE Brotero.

"Perennial; endlessly confused with *C. maximum* in gardens, and the two species are very variable and difficult to distinguish; the flowers can hardly be told apart. *C. lacustre* is a taller and more vigorous plant, and sometimes it is branched at the top, bearing three heads, while *C. maximum* is always 1-headed, and the leaves in that species are much narrower. Height, 3 to 6 feet; stem sparsely branched; leaves partly clasping, ovate-lanceolate, with coarse, hard teeth; rays about 1 inch long; pappus of the ray 2 to 3 eared. Portugal, along rivers, swamps, and lakes." (*Bailey, Standard Cyclopedia of Horticulture, vol 2, p. 757.*)

40638. CHRYSANTHEMUM LEUCANTHEMUM L. **Oxeye daisy.**

40639. CHRYSANTHEMUM MACROPHYLLUM Waldst. and Kit.

"Perennial herb, 3 feet; leaves very large, nearly sessile, pinnatisect, the lobes lanceolate and coarsely toothed; heads very many, corymbed; rays white with yellowish tinge, the disk yellow. June, July; an outdoor plant. Hungary." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 758.*)

40627 to 40644—Continued.

40640. CHRYSANTHEMUM MAXIMUM Ramond.

"This perennial species has narrower leaves than *C. lacustre*, and they are narrowed at the base; height, 1 foot; stems more angled than the above, simple or branched at the base, always 1-headed and leafless for 3 to 4 inches below the head; lower leaves petioled, wedge shaped at the base, or long oblanceolate; the upper leaves becoming few, lanceolate, but usually not very prominently pointed, the teeth not very large or striking; pappus, none; involucral scales narrower and longer, whitish transparent at the margin, while those of *C. lacustre* are broader, more rounded at the apex, and with a light-brown scarious margin. Pyrenees." (*Bailey, Standard Cyclopedia of Horticulture, vol 2, p. 757.*)

40641. CHRYSANTHEMUM MYCONIS L.

Plant erect or ascending, glabrous or pubescent, simple or strictly branched. Leaves serrate; the lower petiolate, obovate-cuneate; the upper semiclasping, obovate-oblong, oblong, or linear. Rays yellow. Mediterranean region. (Adapted from *Hálacsy, Conspectus Florae Graecae, vol. 2, p. 69, 1902.*)

40642. CHRYSANTHEMUM PALLENS Gay.

Plants erect, more or less hispid, one to few headed. Lower leaves petiolate, obovate-cuneate, crenate; the others sessile, ligulate, dentate, or the uppermost often entire. Rays white. Europe. (Adapted from *Hálacsy, Conspectus Florae Graecae, vol. 2, p. 68, 1902.*)

40643. CHRYSANTHEMUM PARTHENIUM (L.) Bernh. **Feverfew.**

"Glabrous strong-scented perennial, 1 to 3 feet, much branched in the taller forms; leaves ovate or oblong-ovate in outline, pinnatisect or bipinnatisect, smooth or lightly pubescent; segments oblong or elliptic-oblong, pinnatifid or cut, the uppermost more or less confluent; flower heads small, many stalked, corymbose; disk yellow; rays white, oblong, equaling or exceeding the disk. Europe to the Caucasus." (*Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 756.*)

40644. CHRYSANTHEMUM PRAEALTUM Vent.

See S. P. I. No. 40545 for previous introduction and description.

40645 to 40649. HORDEUM VULGARE L. Poaceæ. **Barley.**

From Backe, Kramfors, Sweden. Presented by Mr. J. Mannerheim, director, Kramfors Joint Stock Company. Received May 8, 1915. Quoted notes by Mr. Mannerheim.

40645. "Grain introduced from Snanse, Norway, 36 years ago. Since that cultivated near the Tåsjöberg."

40646. "Grain from Backe village in Fjällsjö Parish. Whence the grain originally came, the farmers can not say. It has nevertheless now been sown for over 30 years from its own seed."

40647. "Grain cultivated at Alanäs parsonage and the seed brought from Jormvattnet, Frostvikens Parish, about 10 years ago."

40648. "This grain has grown for many years in Bergvettnets village, Dorotea Parish, on the farm of J. Gustafson. This grain sprang from a variety the name of which is not given."

40649. "The grain came from Aldernas village, Tåsjö Parish, and has grown in Risböck on the farm of Th. Tjäuden for three years."

40650 to 40669.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 19, 1915. Quoted notes by Mr. Meyer.

40650. AVENA NUDA Hoejer. Poaceæ. **Oat.**

"(No. 2184a. Paodji, near Hsiku, Kansu, China, November 6, 1914.) Hull-less oats, cultivated in the higher regions of Kansu and Tibet as a human food. The grains are parched slightly, ground into flour, which is mixed with weak tea and eaten as a porridge. Flour from nonparched oats is also much used in the making of noodles and for certain coarse cakes. These oats are apparently able to stand more drought and heat than hull-less barley, which is also much grown in the higher mountain regions of northwestern China. They are, however, apparently not as productive as the hull-less barley and the flour has not quite the rich flavor that the barley flour has. Of interest to breeders and of value for the intermountain sections of the United States."

40651. AVENA SATIVA L. Poaceæ. **Oat.**

"(No. 2185a. Titaochow, Kansu, China. December 3, 1914.) Mixed varieties of oats, grown locally at altitudes between 6,000 and 8,000 feet above the sea. Used as feed for domestic animals. Of interest to breeders; they possibly may produce varieties more resistant to drought and heat than our present strains in cultivation."

40652. HORDEUM VULGARE L. Poaceæ. **Barley.**

"(No. 2186a. Kiucheng (near Taochow), Kansu, China. November 28, 1914.) Hull-less barley, cultivated up to 11,000 feet above the sea on mountain terraces in western Kansu and Tibet. Much used as a human food and in some sections the mainstay of the people. The grains are parched, ground into flour, and this flour is eaten mixed with hot tea, butter, or grease, when obtainable, and often a bit of salt is added. Most times it is consumed in the form of a stiff dough, manipulated and eaten with the fingers, and called *Tzamba*. Another way is to pour hot water or milk on it and eat it as a gruel or porridge. The flour from nonparched grains is used in the form of noodles, often much mixed with flour from broad beans, from which it receives a coarse flavor. Of value for the more elevated regions of the United States."

40653 and 40654. ZEA MAYS L. Poaceæ. **Corn.**

40653. "(No. 2187a. Tungtung, Kansu, China. November 19, 1914.) A fine variety of white-seeded flint maize, cultivated on mountain terraces at altitudes between 4,500 and 5,000 feet above the sea. Of value possibly in extending maize culture farther north."

40654. "(No. 2188a. Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A variety of flint maize with red grains and small ears; grown in the higher mountain regions where the nights are always cool and often very short seasons are experienced. Of value possibly in extending maize culture farther north."

40655. VICIA FABA L. Fabaceæ. **Broad bean.**

"(No. 2189a. Kiucheng (near Taochow), Kansu, China. November 28, 1914.) Broad beans are much grown in the mountains of western Kansu and Tibet at altitudes of 6,000 to 11,000 feet above the sea. They are much used as human food when ground into flour, of which noodles are

40650 to 40669—Continued. (Quoted notes by Mr. F. N. Meyer.)

made, usually with flour from wheat, barley, or oats added. The inferior qualities are used as feed for hard-working domestic animals. Chinese name *Ta tou*, meaning 'big bean.' Of value for the more elevated sections of the United States as a summer crop. As a winter crop, they thrive well in all such sections where there are no heavy frosts."

40656 to 40660. SOJA MAX (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

40656. "(No. 2190a. Yangpingkwan, Shensi, China. September 10, 1914.) A small-seeded variety of soy bean, of greenish color, grown along the edges of submerged rice fields. Of value possibly as an aftercrop for moist lands in the southern United States."

40657. "(No. 2191a. Yangpingkwan, Shensi, China. September 10, 1914.) A very small-seeded variety of soy bean, of yellow color, grown along the edges of submerged rice fields. Of value possibly as an aftercrop for moist lands in the southern United States."

40658. "(No. 2192a. Yangpingkwan, Shensi, China. September 10, 1914.) A very small-seeded variety of the soy bean, of black color. Said to be of somewhat twining habit and growing on drier lands than the preceding numbers [S. P. I. Nos. 40656 and 40657]".

40659. "(No. 2193a. Siku, Kansu, China. November 19, 1914.) Mixed green and yellow seeded varieties of soy beans of nonshattering habits. Grown on warm, dry mountain terraces under decidedly semiarid conditions. Of value possibly for the southwestern United States more specifically."

40660. "(No. 2194a. Lanchowfu, Kansu, China. December 15, 1914.) Mixed brown and yellow seeded varieties of soy beans; not grown locally, but probably coming from Shensi."

40661. PISUM ARVENSE L. Fabaceæ. **Field pea.**

"(No. 2195a. Yangpingkwan, Shensi, China. September 10, 1914.) Gray field peas, much grown as a winter crop in the milder sections of the Yangtze and Yellow River basins; also as a summer crop in the cooler mountain sections of western Kansu. They are much fed to hard-working domestic animals, preferably broken up coarsely and mixed with chopped straw of proso, bird's millet, and even kaoliang. A very palatable starch is also made from them, looking like blancmange, which is much eaten cold in summer, sprinkled over with some vinegar and chili-pepper sauce. Chinese name *Wan tou*."

40662. PISTACIA CHINENSIS Bunge. Anacardiaceæ. **Pistache.**

"(No. 2196a. Near Kuanyintang, between Paoki and Fenghsien, Shensi, China. September 15, 1914.) A beautiful and characteristic Chinese pistache tree, having graceful, pinnate foliage, which when just coming out is of wine-red color, then becomes glossy green, while toward fall it turns to flaming scarlet, purple, and yellow hues. The tree is diœcious, the males becoming larger and taller than the females, lives to be several centuries old, and can reach truly enormous sizes when very old and when located in a good situation. A tree near the village of Tsaikiapu, Shensi Province, has a girth of 16 feet at 5 feet above ground. Of value as a graceful park and avenue tree, especially for the milder semiarid sections of the United States."

40650 to 40669—Continued. (Quoted notes by Mr. F. N. Meyer.)

40663 to 40667. HOLCUS SORGHUM L. Poaceæ. **Kaoliang.**
(*Sorghum vulgare* Pers.)

40663. "(No. 2197a. Fenghsien, Shensi, China. September 5, 1914.) A small variety of kaoliang, with small heads; grown along the edges of fields as windbreaks. Generally sown in strips from 1 to 2 feet wide."

40664. "(No. 2198a. Chowchih (Djotze), Shensi, China. September 7, 1914.) A tall and erect variety of kaoliang, with compact heads and brown grains, grown in large fields."

40665. "(No. 2199a. Near Meihsien, Shensi, China. September 9, 1914.) A medium tall variety of kaoliang with dense and heavy heads and large grains of dark-amber color. Grown in patches close to the villages. Used as a human food when ground into flour, from which are made little loaves which are of coarse taste and texture. Chinese name *Ta shih kaoliang*, meaning literally 'big, full, high grass.'"

40666. "(No. 2200a. Near Hweihsien, Kansu, China. September 26, 1914.) A tall slender variety of kaoliang, with drooping heads, having large grains. Grown only for spirit manufacturing."

40667. "(No. 2201a. Near Hweihsien, Kansu, China. September 29, 1914.) A robust variety of kaoliang of tall growth, with heavy drooping heads and very large grains. Grown exclusively for spirit manufacturing."

40668. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. Amygdalaceæ.
(*Prunus davidiana* Franch.) **Wild peach.**

Received at the Plant Introduction Field Station, Chico, Cal., April 30, 1915.

"(No. 2182a. Peking, China. February 27, 1915.) The well-known *davidiana* peach, used as a stock for stone fruits in North China. Collected in several localities in the Chihli Province; obtained by purchase. Chinese name *Shan t'ao*, meaning 'mountain peach.'"

40669. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

Received at the Plant Introduction Field Station, Chico, Cal., April 30, 1915.

"(No. 2183a. Peking, China. February 25, 1915.) The *Ghoorma*, or *Ghoorma* persimmon, much used as a stock in North China to ring-bud or patch-bud kakis upon. Obtained by purchase. Chinese name *Hei tsao*, meaning 'black jujube.'"

40670. GENTIANA LUTEA L. Gentianaceæ. **Gentian.**

From Geneva, Switzerland. Presented by Mr. H. Correvon. Received May 11, 1915.

"A tall, stout, hollow-stemmed perennial herb of open or partly open grassy places on the mountains of southern and central Europe. Its large flowers are bright yellow and spotted and occur in axillary clusters. The underground portion is frequently a yard in length and may have several long branches. It is commonly collected in flower. To prevent its extermination, the Austrian Government imposed a heavy fine for collecting a root not at least 2 cm. (four-fifths of an inch) in diameter at the top, this ordinarily requiring a 3-years'

growth and insuring its previous propagation by seed. The United States' supply comes chiefly from France. One of the best of the simple bitters, exciting the flow of the gastric juice, promoting the appetite, and aiding digestion." (*The National Standard Dispensatory, pp. 713–714.*)

Plants.

40671 and 40672. Lathyrus spp. Fabaceæ.

From Nancy, France. Presented by Mr. Edmond Gain, director, Botanic Garden. Received May 1, 1915. Secured for the breeding experiments of Mr. David Burpee.

40671. Lathyrus cirrhosus Ser.

See S. P. I. No. 40311 for previous introduction and description.

40672. Lathyrus sylvestris L. **Everlasting pea.**

See S. P. I. Nos. 32415 and 40537 for previous introductions and description.

40673. Aleurites cordata (Thunb.) Muell. Arg. Euphorbiaceæ. Kiri oil tree.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received May 12, 1915.

"The wood is used for boxes and clogs and the bark for dyeing fishing nets. From the nuts oil is pressed. This is called *kiri* oil. It is thick and poisonous; rats die soon after eating it. Umbrellas, raincoats, poles, lanterns, paper doors, etc., are coated with the oil. It is also used in printing shops, as it dries quickly. The recent advancement of chemical knowledge has discovered divers uses for it, viz, the oil can be employed directly in varnish manufacturing without previous oxidation, and after boiling with oxid of lead it dissolves in turpentine oil and produces refined varnish without adding turpentine. If paper be soaked with the oil, it makes a transparent waterproof on which any mark can be made with ink. Paint made of the *kiri* oil instead of linseed oil dries quicker; hence it is better adapted for painting ships and metal work." (Translated from the Japanese, *Timber Trees Utility, by Moroko.*)

See S. P. I. Nos. 21012 and 25080 for previous introductions and description.

For an illustration of the seeds of the kiri oil tree, see Plate IV.

40674 to 40676. Citrus spp. Rutaceæ.

From Lamao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station. Received May 15, 1915.

40674. Citrus medica L. **Citron.**

40675. Citrus medica nana Wester.

"This variety might make an interesting pot plant." (*Wester.*)

"A small, thorny shrub, rarely exceeding 2 meters in height; fruit 65 or more mm. long, 55 mm. in diameter, ellipsoid to almost roundish, pointed at apex, lemon yellow, smooth; rind medium thick; pulp grayish to greenish, acid, rather dry; juice cells long and slender, almost linear; seeds many, rather small, flattened, smooth. The plant is rather common in the Archipelago and has been noted in Tarlac, Pampanga, Bulacan, Laguna, and Cebu. It is frequently grown and fruited in small pots, and is probably the smallest species in the genus. It is surprisingly productive and precocious, fruiting as early as the second year from seed, and is practically everbearing. The fruit is eaten by the Filipinos,

40674 to 40676—Continued.

but is too dry to be cultivated for the flesh, and the skin is too thin for utilization as citron peel." (*Wester, Citrus Fruits in the Philippines, Philippine Agricultural Review, first quarter, 1915.*)

40676. CITRUS MEDICA ODORATA Wester. **Tihi-tihi.**

"The leaves of this species contain 0.6 per cent essential oil, and the plant might possibly be grown for this oil." (*Wester.*)

"A small, thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; fruit 60 to 65 mm. long, 7 to 10 cm. in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammillate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised, skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis Mindanao. The plant is very precocious, fruiting as early as the third year from seed, everbearing, and the fruit is used by the Filipinos in washing the hair. It is not eaten and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron." (*Wester, Citrus Fruits in the Philippines, Philippine Agricultural Review, first quarter, 1915.*)

40677 to 40770.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 11, 1915. Quoted notes by Mr. Meyer.

40677 to 40680. JUNIPERUS spp. Pinaceæ. **Juniper.**

40677. JUNIPERUS SALTUARIA Rehder and Wilson.

"(No. 2202a. Siku, Kansu, China. November 14, 1914.) A peculiar species of juniper, of weeping habit, forming long cordlike branches, which hang down perpendicularly from the crown. Able to stand much drought and heat, but apparently quite sensitive to severe frosts. Of value as a quaint ornamental tree for cemeteries, especially for the drier sections of the United States. Chinese name *Tzu pei shu,* meaning 'pointed conifer.'"

40678. JUNIPERUS FORMOSANA Hayata.

"(No. 2203a. Kwatsa, on Siku River, Kansu, China. November 10, 1914.) A juniper of weeping habits, very similar to the preceding number [S. P. I. 40677], but branches less drooping. Of value as a quaint ornamental tree for cemeteries, especially in the drier sections of the United States."

40679. JUNIPERUS CHINENSIS L.

"(No. 2204a. Sianfu, Shensi, China. January 25, 1915.) A tall-growing juniper of graceful habit, assuming characteristic shapes when old. Foliage bluish. Apparently not able to withstand severe frosts. Of decided value as a park tree for those semiarid sections of the United States where the winters are not too severe."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40680. JUNIPERUS CHINENSIS L.

"(No. 2205a. Djaszeyu, near Pingliang, Kansu, China. January 15, 1915.) A beautiful pyramidal variety of juniper of bluish color. Found in an old temple court. Of value as a park tree for the semiarid sections of the United States where the winters are not too cold."

40681 to 40688. BERBERIS spp. Berberidaceæ. **Barberry.**

40681. BERBERIS POTANINI Maxim.

"(No. 2206a. Near Siku, Kansu, China. November 16, 1914.) A barberry with very spiny, hard, glistening foliage, bearing a multitude of coral-red berries, making in some specimens the branches bend down with their weight. Height of bushes from 3 to 5 feet. Found on dry rocky places and especially on mountain slopes of decomposed rock. Of value as an ornamental garden and park shrub, especially for the mild-wintered semiarid sections of the United States. Chinese name *Huang lien tz'ŭ*, meaning 'yellow medium thorn.'"

40682. BERBERIS SOULIEANA Schneider.

"(No. 2207a. Near Kwatsa, Kansu, China. November 10, 1914.) A form of the preceding number, but of more open growth and with larger berries of a carmine-red color. A very handsome shrub. Of value as an ornamental garden and park shrub, especially for the mild-wintered semiarid sections of the United States."

40683. BERBERIS sp.

"(No. 2208a. Near Kulentze, near Minchow, Kansu, China. November 25, 1914.) A barberry of tall growth, bearing large fruits on long racemes. Foliage large, serrated, spines over 1 inch in length. Found on mountain slopes at altitudes between 7,000 and 9,000 feet. Of value as a park shrub for the cooler parts of the United States."

40684. BERBERIS sp.

"(No. 2209a. Near Paodji, near Siku, Kansu, China. November 7, 1914.) A barberry growing to be over 20 feet tall, having large leaves and large spines. A rare shrub found beneath tall trees in open woods at an altitude of over 8,000 feet. Of value as a park shrub for the cooler parts of the United States."

40685. BERBERIS sp.

"(No. 2210a. Near Tungtung, near Tangchangpu, Kansu, China. November 19, 1914.) A tall-growing barberry found among dense scrub on rocky mountain slopes at altitudes between 6,000 and 8,000 feet. Of value as a park shrub for the cooler parts of the United States."

40686. BERBERIS sp.

"(No. 2211a. Yangsa, near Titaochow, Kansu, China. November 30, 1914.) A barberry of rather dense bushy growth, found on open spaces. Foliage small; berries transparent, light red color, very juicy, and of an agreeable sour taste, produced in great quantities. These berries could be utilized possibly for making tart preserves; they also could be used, when dried and ground, as a sour condiment

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

on game and on fish dishes, replacing lemon juice in all sections where the latter is not available. Of value as an ornamental shrub for bordering sidewalks and paths in parks and gardens in the cooler sections of the United States."

40687. BERBERIS sp.

"(No. 2212a. Near Kagoba, south of Siku, Kansu, China. October 31, 1914.) A barberry of very low growth, being only from 1 to 3 feet high; foliage very small, berries light carmine, juicy, produced in great masses. Found along embankments and on fields at altitudes from 6,000 to 10,000 feet; fruit ornamental. Of value, like the preceding number, as an ornamental shrub for bordering sidewalks and paths in parks and gardens in the cooler sections of the United States."

40688. BERBERIS AGGREGATA Schneider.

"(No. 2213a. Near Siku, Kansu, China. October 20, 1914.) A low-growing barberry with very small fruits and foliage. Found amidst stony débris at an altitude of 4,500 feet. Possibly a form of the preceding number [S. P. I. 40687]. Of value as an ornamental shrub for bordering sidewalks and paths in parks and gardens in the cooler sections of the United States."

40689 to 40691. LONICERA spp. Caprifoliaceæ. **Honeysuckle.**

40689. LONICERA sp.

"No. 2214a. Near Chiaochuanchen, near Chenghsien, Kansu, China. October 5, 1914.) A shrubby honeysuckle, found along mountain bases. Foliage large; berries large and dull red color; of somewhat open habit. Of use as an ornamental shrub for parks and gardens."

40690. LONICERA THIBETICA. Bur. and Franch.

"(No. 2215a. Near Taochow, Kansu, China. November 25, 1914.) A low shrubby honeysuckle of somewhat spreading growth. Cuttings sent under No. 1240 [S. P. I. No. 39915], which see for further description."

40691. LONICERA sp.

"(No. 2216a. Near Taipintze, near Taochow, Kansu, China. November 29, 1914.) A low-growing species of shrubby honeysuckle, having slender branches and small foliage, of habit similar to the preceding number [S. P. I. 40690]. Collected at an altitude of 10,000 feet. Of value as a border shrub for the cold and dry sections of the United States."

40692 to 40694. VIBURNUM spp. Caprifoliaceæ.

40692 and 40693. VIBURNUM KANSUENSE Batalin.

40692. "(No. 2217a. Near Kagoba, south of Siku, Kansu, China. October 31, 1914.) A tall Viburnum of loose, open growth; leaves of oblong form, bunches of berries large and dense. Found among scrub on stony mountain sides at altitudes between 6,000 and 9,000 feet. The red berries of this shrub are sour, very juicy, and of agreeable flavor. They can be utilized in making vinegar and refreshing drinks. Of value as an ornamental shrub for the cooler regions of the United States."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40693. "(No. 2218a. Near Paodji, near Siku, Kansu, China. November 9, 1914.) The same species apparently as preceding number, but the individual berries are larger and juicier. From the expressed juice we made a wine-red lemonade of very pleasing flavor, resembling in taste and looks red currant juice."

40694. VIBURNUM sp.

"(No. 2219a. Near Kagoba, south of Siku, China. November 1, 1914.) A tall-growing Viburnum, with short, round-oblong leaves, of open habit; racemes large and open, berries dark carmine red; flavor bitterish and not very juicy. Found on shady places at altitudes between 6,000 and 8,000 feet. Of value as an ornamental shrub for the cooler regions of the United States."

40695. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 2220a. Near Sanszemiao, near Taochow, Kansu, China. December 1, 1914.) A honeysuckle of erect, bushy growth, found on open, stony places at altitudes between 7,000 and 8,000 feet. Of value as an ornamental shrub for the cooler regions of the United States."

40696 to 40698. EUONYMUS spp. Celastraceæ.

40696. "(No. 2221a. Near Kulentze, near Minchow, Kansu, China. November 24, 1914.) A shrubby spindle wood, found in dry loess banks, forming heavy trunks when not molested. Of value as an ornamental shrub for the cooler regions of the United States."

40697. "(No. 2222a. Near Kulentze, near Minchow, Kansu, China. November 24, 1914.) A low-growing spindle wood, with somewhat leathery leaves, found in dry loess banks. Of value as a rockery shrub for dry localities."

40698. EUONYMUS NANUS Bieberstein.

"(No. 2223a. Near Taochow, Kansu, China. November 25, 1914.) A spindle wood of very small, crawling growth, found on shady places amongst scrub and moss, at altitudes between 7,000 and 8,000 feet. Leaves small, lanceolate, evergreen apparently; fruit carpel large, out of which the scarlet-coated seeds hang down gracefully. Of value as a rockery plant for cool regions."

40699 to 40702. ROSA spp. Rosaceæ. **Rose.**

40699. ROSA SWEGINZOWII Koehne.

"(No. 2224a. Near Sanszemiao, near Taochow, Kansu, China. December 1, 1914.) A wild rose, resembling *Rosa hugonis;* of very vigorous growth and having remarkably broad spines, which vary much in size and in quantity on various specimens. Found on rocky mountain slopes at altitudes between 5,000 and 8,000 feet. Of value possibly as a factor in hybridization experiments."

40700 to 40702. ROSA sp.

40700. "(No. 2225a. Near Chiaochuanchen, near Chenghsien, Kansu, China. October 6, 1914.) A very vigorously growing rose of climbing habits, overrunning clumps of shrubbery. Bears very large clusters of orange-red berries; foliage large, slightly pubescent. Of value possibly as a vigorous stock and

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

as a factor in hybridization experiments. Collected at an altitude of 4,000 feet."

40701. "(No. 2226a. Near Chenyatan, near Titaochow, Kansu, China. December 2, 1914.) A bushy rose, of erect growth, averaging a height of 5 to 7 feet. Twigs of reddish color, almost spineless. Collected at an altitude of 7,000 feet. Of possible value as a factor in hybridization experiments."

40702. "(No. 2227a. Near Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A shrubby rose, quite spiny, found on dry, stony mountain slopes. Flowers apparently yellow. Of possible value as a factor in hybridization experiments."

40703. STEPHANANDRA CHINENSIS Hance. Rosaceæ.

"(No. 2228a. Near Paodji, near Siku, Kansu, China. November 9, 1914.) A shrub of running habit, found on stony mountain slopes at altitudes between 5,000 and 7,000 feet. Leaves large; loves somewhat shaded places. Of value as a cover shrub beneath trees in large grounds."

40704. CLEMATIS sp. Ranunculaceæ. Clematis.

"(No. 2229a. Near Tangchang, Kansu, China. November 20, 1914.) A bushy clematis, found amidst dry, rocky débris at altitudes between 5,000 and 7,000 feet. Flowers yellow; foliage finely dissected. Of use as a border shrub of small dimensions for dry regions."

40705. JASMINUM GIRALDI Diels. Oleaceæ. Jasmine.

"(No. 2230a. Near Siku, Kansu, China. October 20, 1914.) A shrubby jasmine, of erect growth, 2 to 4 feet in height, found amongst rocks and stony débris. Foliage pinnate; flowers yellow, followed by showy black berries. Of value as a small ornamental shrub for gardens and parks in dry mild regions."

40706. CORIARIA SINICA Maxim. Coriariaceæ.

"(No. 2231a. Near Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A vigorously growing shrub, of erect habit, found in great masses on open hill slopes at altitudes between 3,000 and 6,000 feet. Leaves relatively large, veined, glistening green; said to bloom profusely with whitish flowers. Berries black, very small, produced in great quantities. Of use in gardens and parks. Local name *Ma kang shu*, meaning 'horse-string tree.'"

40707. SOPHORA DAVIDII (Franch.) Komarov. Fabaceæ.

"(No. 2232a. Near Chaolienli, north of Fenghsien, Shensi, China. September 17, 1914.) A thorny shrub, growing from 3 to 5 feet in height, found on stony and waste places. Utilized here and there as a hedge plant, but of decidedly weedy tendency. Foliage grayish green, flowers whitish lilac, pods somewhat downy, produced in immense quantities. Of use as a bee plant on waste places; also suitable for hedges when kept well under control."

40708. BAUHINIA FABERI Oliver. Cæsalpiniaceæ.

"(No. 2233a. Near Madjakey, near Chiehchow, Kansu, China. October 10, 1914.) A densely growing shrub, 3 to 4 feet in height, found amidst stony débris on mountain slopes. Leaves of peculiar form, being split in on top. Of use as an ornamental and as a stone-binding shrub for gullies and river banks in dry, mild-wintered climates."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40709. SYRINGA sp. Oleaceæ. **Lilac.**

"(No. 2234a. Near Palitang, near Kingchow, Kansu, China. January 17, 1915.) A small lilac, growing from 3 to 5 feet in height, having small leaves and apparently very floriferous. Found covering whole loess hill slopes in company with *Amygdalus davidiana* at an altitude of 3,500 feet. Of value as a hardy flowering shrub for the dry and cool sections of the United States."

40710. ACANTHOPANAX LEUCORRHIZUS (Oliver) Harms. Araliaceæ.

"(No. 2235a. Chishan, near Changhsien, Kansu, China. October 1, 1914.) A shrub of erect and rather open growth, found beneath trees and on clearings in woods at altitudes of 4,000 to 7,000 feet above the sea. Leaves trifoliate to quinquefoliate; in autumn loaded with multitudes of heavy bunches of black berries. Of use as a cover shrub beneath trees; also eligible for shady corners."

40711. CARAGANA sp. Fabaceæ.

"(No. 2236a. Near Taochow, Kansu, China. November 26, 1914.) A spiny shrub of low growth, found along dry loess ledges and in pebbly banks; locally much utilized as a hedge plant. Able to withstand low temperatures and great droughts. Of value as a hedge plant for the drier colder sections of the United States. Collected at an altitude of over 9,500 feet above the sea."

40712. HYDRANGEA LONGIPES Franchet. Hydrangeaceæ.

"(No. 2237a. Near Paodji, near Siku, Kansu, China. November 7, 1914.) A shrub growing to be from 3 to 5 feet tall, found in shady places. Cuttings sent under No. 1232 [S. P. I. No. 39908]."

40713. CARYOPTERIS INCANA (Thunb.) Miquel. Verbenaceæ.
(*Caryopteris mastacanthus* Schauer.)

"(No. 2238a. Near Siku, Kansu, China. November 18, 1914.) A small shrub, found amidst débris on dry hillsides and in rocky places in general. Foliage rather small, of grayish green color, blooms very late in the season, that is, from the end of September until the middle of October, with blue flowers. Is much visited by bees. All parts of the plant smell strongly of creosote; aromatic, somewhat like the sages in the western United States. This plant possesses great value as a late-flowering bee plant and deserves to be naturalized, in company with *Vitex incisa*, in rocky and dry localities, and more specifically in the foothill sections of the Rockies and the Sierra Nevada ranges in the United States. Chinese name *Shan hao tzŭ*, meaning 'mountain wormwood.'"

40714. ZANTHOXYLUM ALATUM Roxb. Rutaceæ.

"(No. 2239a. Near Yuyinchen, between Liangtang and Hweihsien, Kansu, China. September 26, 1914.) A Chinese pepper tree with large-winged foliage, covered with long spines; apparently semi-evergreen. Found on sheltered shady places. Of use possibly as an ornamental garden and park shrub for the mild-wintered sections of the United States."

40715. HIPPOPHAË RHAMNOIDES PROCERA Rehder. Elæagnaceæ.

"(No. 2240a. Near Paodji, near Siku, Kansu, China. November 9, 1914.) A species of sea buckthorn, reaching a height of 40 feet, with a trunk 2 feet in diameter; leaves larger than in *H. rhamnoides;* berries

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

of pale waxy color; very sour. Occurring in mountain ravines and on pebbly creek bottoms, sometimes to the exclusion of almost everything else. Of value as an ornamental park tree, suited especially for the cooler and drier sections of the United States. Collected at an altitude of 7,000 feet above the sea. Chinese name *Suan tz'ŭ*, meaning 'sour thorn.'"

40716 and 40717. RHUS spp. Anacardiaceæ. **Sumac.**

40716. RHUS JAVANICA L.

"(No. 2241a. Near Yuyinchen, between Liangtang and Hweihsien, Kansu, China. September 25, 1914.) A sumac, found on stony mountain slopes, in ravines, and in wild places, becoming a tall shrub or small tree. Leaves large, light green, pubescent, winged. Fruits borne in large spikes; berries coated with a sticky whitish wax which burns readily. The Chinese do not seem to utilize this wax in any way. Of value as an ornamental park shrub for the mild-wintered sections of the United States."

40717. RHUS POTANINI Maxim.

"(No. 2242a. Mountains near Kwanyintang, between Paoki and Fenghsien, Shensi, China. September 15, 1914.) A sumac with medium-sized, glossy green leaves and reddish petioles, becoming a tall shrub or even a tree up to 60 feet high. Assumes most brilliant colors in fall. Produces many spikes of reddish bronze-colored berries, which persist on the trees for a long time. On this sumac a gall insect makes its home, producing large inflated galls, which the Chinese utilize much for dyeing black. The foreigners, however, found that they contain a great percentage of tannin, vast quantities being exported from Hankow, especially under the name of Chinese gallnuts. This sumac possibly might be cultivated on cheap lands in the Southern States for its gall production. It is not very particular as to soil requirements, but it loves good drainage. Care should be taken, however, to keep it well under control, as it has decidedly weedy tendencies. Chinese name, *Wu pei tzŭ shu*, meaning 'five-folded seed tree.'"

40718. HOVENIA DULCIS Thunb. Rhamnaceæ.

"(No. 2243a. Siku, Kansu, China. November 12, 1914.) A tree growing to be 40 to 60 feet high, cultivated in gardens for its peculiar looking swollen fruit stalks, which are very sweet and much beloved by the Chinese as a delicacy. They are believed to undo the effects of having had too much wine at a dinner or a feast. This tree is not particularly ornamental, with its elmlike leaves and its rather open growth. It might be cultivated, however, on a small scale in the Southern States, so as to supply the large Chinese colonies in America with one of their favorite sweetmeats. These fruit pedicels can be eaten fresh or dried; in the latter way they can be shipped over long distances. Chinese name *Kua tsao*, meaning 'warming jujube.'"

40719. EVODIA RUTAECARPA (Juss.) Hook. f. and Thoms. Rutaceæ.

"(No. 2244a. Near Chaolienli, near Fenghsien, Shensi, China. September 17, 1914.) A medium-sized tree, with handsome pinnated leaves, bearing large umbels of whitish flowers, followed by big bunches of fruits, which, at first green, later on turn to a dark-red color. Found in some-

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

what stony places. Of value as an ornamental garden and park tree for the mild-wintered sections of the United States. Chinese name *Shan la tzŭ shu*, meaning 'mountain pepper tree.'"

40720. TILIA sp. Tiliaceæ. **Linden.**

"(No. 2245a. Near Paodji, near Siku, Kansu, China. November 7, 1914.) A linden of medium-tall growth, having large leaves, found on moist mountain slopes at altitudes between 7,000 and 9,000 feet above the sea. Of value as an ornamental park tree for the cooler sections of the United States."

40721. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 2246a. Shensi and Honan, China. January and February, 1915.) Cultivated peaches, collected along the roadsides. To be sown to obtain new types, possibly."

40722. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. Amygdalaceæ.
(*Prunus davidiana* Franch.) **Wild peach.**

"(No. 2247a. Near Chaotien, near Lungteh, Kansu, China. January 14, 1915.) The well-known *davidiana* peach, found on a rocky hill slope at an altitude of 6,000 feet above the sea. This is possibly the most western locality in China of this interesting wild peach. Local name *Mao t'ao*, meaning 'hairy peach.'"

40723. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Mala-
(*Cydonia cathayensis* Hemsl.) [ceæ. **Quince.**

"(No. 2248a. Chiehchow, Kansu, China. October 14, 1914.) A variety of Chinese quince, being different from the ordinary sorts in that the fruits are round, of greenish color, and scented differently. Of use for those sections of the United States where winter temperatures do not go very low."

40724 to 40728. PYRUS spp. Malaceæ. **Pear.**

40724. PYRUS sp.

"(No. 2249a. Near Liangtang, Kansu, China. September 24, 1914.) A wild pear of shrubby growth; also seen occasionally as a small tree. Fruits small, globose, of greenish color; calyx persistent; peduncles long; meat becoming soft and pulpy. Local name *Mei li*, meaning 'plum pear.'"

40725. PYRUS SERRULATA Rehder.

"(No. 2250a. Near Liangtang, Kansu, China. September 24, 1914.) A wild pear, growing into a small tree; leaves large, of open growth; fruits small, of brown color; calyx deciduius; peduncles short. Found on open, stony mountain sides at altitudes of 4,000 feet above the sea."

40726. PYRUS sp.

"(No. 2251a. Lanchowfu, Kansu, China. December 14, 1914.) A small pear, of russet-brown color; peduncles very long; calyx deciduous; meat soft and mealy. Sold on the streets of Lanchowfu."

40727. PYRUS sp.

"(No. 2252a. Minchow, Kansu, China. November 23, 1914.) A sour pear of round shape; calyx persistent; peduncles short; flesh

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

melting. Of poor keeping quality. Probably derived from a local wild species."

40728. PYRUS CHINENSIS Lindl.

"(No. 2253a. Pingliang, Kansu, China. January 16, 1915.) Local large pears of several varieties, all of hard flesh. To be sown to obtain new types, possibly."

40729. MALUS sp. Malaceæ. **Crab apple.**

"(No. 2254a. Sianfu, Shensi, China. August 30, 1914.) Crab apples of various sizes, purchased on the streets of Sianfu. To be tested in comparatively dry regions."

40730. COTONEASTER sp. Malaceæ.

"(No. 2255a. Near Kagoba, south of Siku, Kansu, China. November 1, 1914.) A tall-growing vigorous species of Cotoneaster with rather large leaves and large dark-violet berries. Found on rocky cliffs and ledges. Of value as an ornamental shrub for parks and gardens. Collected at an altitude of 6,000 feet above the sea."

40731. ALBIZZIA sp. Mimosaceæ.

"(No. 2256a. Near Yaopuko, near Chenghsien, Kansu, China. October 6, 1914.) A medium-sized ornamental tree, with large, feathery foliage, bearing tufts of yellowish white flowers. Found on mountain slopes of decomposed rock. Roots sent in under No. 1211 [S. P. I. No. 38285]."

40732. LESPEDEZA sp. Fabaceæ.

"(No. 2257a. Near Kanchuan, Kansu, China. October 9, 1914.) A small shrub, found on loess mountain slopes. Of value as a soil binder and possibly as a fodder shrub for sandy regions."

40733. VITIS sp. Vitaceæ. **Grape.**

"(No. 2258a. Near Chaolienli, near Fenghsien, Shensi, China. September 17, 1914.) Wild grapes found among tall scrub. The same remarks apply to it as to No. 2164a [S. P. I. No. 40026.]"

40734 and 40735. COTONEASTER spp. Malaceæ.

40734. "(No. 2259a. Near Taipintze, near Taochow, Kansu, China. November 29, 1914.) A very small shrub, found at altitudes between 6,000 and 11,000 feet above the sea, crawling between stones and grass. Of value as a rockery plant for cold regions. Chinese name *Lao wan shan shu*, meaning 'old creeping mountain tree.'"

40735. "(No. 2260a. Near Paodji, near Siku, Kansu, China. November 6, 1914.) A medium-sized shrub, with small foliage, bearing black berries. Found in stony places at an altitude of 7,000 feet above the sea. Of value as an ornamental garden shrub for cool regions."

40736. PYRACANTHA CRENULATA (Don) Roemer.
(*Crataegus crenulata* Don.)

"(No. 2261a. Near Yaupuko, near Chenghsien, Kansu, China. October 6, 1914.) A small shrub, with small, orange-colored berries and very small foliage. Found on stony mountain sides. Of value as a very ornamental rockery shrub for those sections of the United States where temperatures do not go down very low. Collected at an altitude of 3,500 feet above the sea."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40737. PYRACANTHA CRENULATA (Don) Roemer.
(*Crataegus crenulata* Don.)

"(No. 2262a. Near Hweihsien, Kansu, China. September 26, 1914.) A shrub of medium small dimensions, closely allied to *Pyracantha coccinea*, having small glistening-green foliage and bearing a multitude of bright-red berries. Found in stony places at altitudes between 3,000 and 5,000 feet above the sea. Of value as a very ornamental rockery shrub for those sections of the United States where temperatures do not go down very low."

40738. AMPELOPSIS ACONITIFOLIA Bunge. Vitaceæ.

"(No. 2263a. Near Meihsien, Shensi, China. September 9, 1914.) A trailing vine, closely resembling *Ampelopsis dissecta*, but with larger leaves and broader winged leaflets. Color of berries dull yellow. Found between stony débris. Of value as a porch and trellis vine, especially for the drier sections of the United States."

40739. AMPELOPSIS sp. Vitaceæ.

"(No. 2264a. Near Nanchichen, near Tsuanchen, Shensi, China. September 5, 1914.) A trailing vine, making long annual shoots, which sprout up from a short woody base or crown; leaves dissected, berries dark violet-black. Found amongst stony débris. Of use as a cover plant for hiding stony and unsightly places; also for planting along terraces."

40740. EUPATORIUM sp. Asteraceæ.

"(No. 2265a. Near Siku, Kansu, China. October 28, 1914.) A small shrub, found on dry, stony places and in dry, pebbly river beds, having masses of flowers, the rays of which are white, while the heart is yellow. Of value as a border and rockery shrub for dry regions. Collected at an altitude of 4,500 feet."

40741 and 40742. NICOTIANA spp. Solanaceæ. **Tobacco.**

40741. NICOTIANA TABACUM L.

"(No. 2266a. Kwatsa, Kansu, China. November 10, 1914.) A variety of tobacco, grown in a semiarid district, at an altitude of 4,000 feet above the sea. To be tested for its nicotine content. Chinese name *Ta ych yen*, meaning 'large-leaved herb.'"

40742. NICOTIANA RUSTICA L.

"(No. 2267a. Near Kanchuan, Kansu, China. October 8, 1914.) A small-leaved, coarse tobacco, much grown in the mountain regions of western China, where it is too cool for the ordinary tobacco to succeed. From its leaves, when pressed into cakes, a finely cut product is made by being planed off, which is smoked in water pipes exclusively. Chinese name *Lan hua yen*, meaning 'blue-flowered herb.'"

40743. ABUTILON THEOPHRASTI Medic. Malvaceæ.
(*Abutilon avicennae* Gaertn.)

"(No. 2268a. Near Nanchichen, near Tsuanchen, Shensi, China. September 5, 1914.) A variety of this well-known fiber plant, with stems of dark-violet color, growing from 8 to 10 feet tall on rich bottom lands. Suggested as a possible paper producer. Chinese name *Pai ma*, meaning 'white hemp.'"

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40744. PSORALEA CORYLIFOLIA L. Fabaceæ.

"(No. 2269a. Near Kweihsien, Shensi, China. September 11, 1914.) An annual herb, growing from 5 to 8 feet tall, cultivated here and there in patches on rich bottom lands. Said to be utilized for medicinal purposes only, the seeds being ground up and forming the main ingredient in Chinese kidney plasters. Of value possibly as a fodder plant for the warmer sections of the United States. Chinese name *Ku p'u chih*, meaning 'great illness medicine.'"

40745. ASTRAGALUS sp. Fabaceæ.

"(No. 2270a. Near Yangsa, near Titaochow, Kansu, China. November 30, 1914.) An annual herb, found among scrub at an altitude of 8,000 feet above the sea, producing much herbage; of value possibly as a forage plant for the cooler sections of the United States."

40746 and 40747. HEDYSARUM sp. Fabaceæ.

40746. "(No. 2271a. Near Liangsui, Kansu, near Fenghsien, Shensi, China. October 18, 1914.) A low-growing perennial herb, found in dry places, amidst stony débris, and on decomposed slate rocks. Produces large spikes of beautiful rosy flowers; seed pods slightly spiny. Of value as an ornamental rockery plant for dry regions; also possibly of use as a forage plant."

40747. "(No. 2272a. Near Liangtang, Kansu, China. September 24, 1914.) A semiwoody, small shrub, growing about 2 feet in height, found on loess mountain slopes. Of interest as a possible forage shrub."

40748 and 40749. MEDICAGO spp. Fabaceæ. **Alfalfa.**

40748. MEDICAGO SATIVA L.

"(No. 2273a. Near Titaochow, Kansu, China. December 2, 1914.) An alfalfa, found wild along the Tao River among briers and scrub at an altitude of 7,000 feet above the sea. To be tested in dry northern localities."

40749. MEDICAGO RUTHENICA (L.) Trautv.

"(No. 2274a. Near Kiucheng (New Taochow), Titaochow, Chingningchow, etc., Kansu, China. November and December, 1914, and January, 1915.) A small alfalfa, of low, crawling growth, found along embankments and on loess table-lands at altitudes between 7,000 and 10,000 feet above the sea in a semiarid climate. Of value as a pasture plant for dry, highly elevated localities."

40750. ERODIUM sp. Geraniaceæ. **Crane's-bill.**

"(No. 2275a. Central Shensi, China. September 2 to 18, 1914.) A crane's-bill found along roadsides and on pebbly embankments; of vigorous growth. Of value apparently as a forage plant for the drier sections of the United States. Also to be tested as a winter crop along the Pacific coast."

40751. LILIUM sp. Liliaceæ.

"(No. 2276a. Hweihsien, Kansu, China. September 28, 1914.) A lily of robust growth, being from 4 to 6 feet high; leaves large; flowers said to be white with dark spots. Obtained from the garden of the Roman Catholic Mission in Hweihsien; the bulbs originally were collected in the mountains south of Hweihsien."

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

40752. ARTEMISIA sp. Asteraceæ.

"(No. 2277a. Near Liangdjapa, near Siku, Kansu, China. November 19, 1914.) A composite of dense growth, occurring in tufts on stony mountain slopes and amidst decomposed slate débris. Flowers yellow, without rays, produced in dense clumps. Blooming during October and ripening its seeds late in November. Of value as a striking rockery plant for dry regions."

40753 and 40754. CHRYSANTHEMUM spp. Asteraceæ. **Chrysanthemum.**

40753. CHRYSANTHEMUM INDICUM L.

"(No. 2278a. Near Akansan, south of Lanchowfu, Kansu, China. December 6, 1914.) A wild chrysanthemum, found in dry loess cliffs and in pebbly banks, producing masses of yellow flowers. Foliage dissected and of a grayish color. Very variable as regards sizes of flowers, foliage, and general looks. Of value as a striking rockery plant for dry regions."

40754. CHRYSANTHEMUM MORIFOLIUM (Ramat.) Hemsl.
(*Chrysanthemum sinense* Sabine.)

"(No. 2279a. Near Hwoshanpu, near Lungteh, Kansu, China. January 13, 1915.) A wild chrysanthemum with margueritelike flowers; of low growth; found on moist mountain slopes at elevations between 7,000 and 9,000 feet above the sea. Of value as a striking rockery plant, needing somewhat moister locations than the preceding numbers [S. P. I. Nos. 40752 and 40753.]"

40755. CERATOSTIGMA PLUMBAGINOIDES Bunge. Plumbaginaceæ.

"(No. 2280a. Near Siku, Kansu, China. November 5, 1914.) A pretty semiwoody perennial with deep-blue flowers; found on dry rocky places and along slate ledges. Of value as a striking rockery plant. Collected at an altitude of 4,500 feet above the sea."

40756. LIMONIUM sp. Plumbaginaceæ.

"(No. 2281a. Near Tungpu, south of Lanchowfu, Kansu, China. December 5, 1914.) A Statice with lemon-colored flowers and finely dissected foliage, occurring on dry loess cliffs and decomposed rocky ledges; quite ornamental; of value as a striking rockery plant. Collected at an altitude of 5,500 feet above the sea."

40757. SCOPOLINA TANGUTICA (Maxim.) Kuntze. Solanaceæ.
(*Scopolia tangutica* Maxim.)

"(No. 2282a. Near Taochow, Kansu, China. November 25, 1914.) An interesting solanaceous herbaceous perennial with large and peculiar fringed seed vessels. Apparently of some medicinal virtue. Collected at an altitude of over 9,000 feet above the sea; occurring on waste places."

40758. HUMULUS LUPULUS L. Moraceæ. **Hop.**

"(No. 2283a. Near Chenyatan, near Titaochow, Kansu, China. December 2, 1914.) Wild hops, occurring in many mountain valleys in Shensi and Kansu. The cones are smaller than in cultivated strains, but they contain a great percentage of lupulin and are very fragrant. Collected at an altitude of over 6,000 feet above the sea."

40759. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

"(No. 2284a. Yangpingkwan, Shensi, China. September 10, 1914.) A variety of eggplant, having very large fruits of purplish white color.

WHITE EGGPLANTS (SOLANUM MELONGENA L.) FROM CHINA (S. P. I. No. 40759).

Baskets of very large fruits of a variety of eggplant of purplish white color and attractive appearance. In parts of China the eggplant is a very important vegetable. (Photographed by Mr. Frank N. Meyer, at Yangpingkwan, Shensi, China, Sept. 10, 1914; P12203FS.)

THE SMITH BAMBOO GROVE AT BURROUGHS, NEAR SAVANNAH, GA. (PHYLLOSTACHYS SP.; S. P. I. No. 40842).

A grove of an undetermined species of bamboo which is certainly distinct from either *P. bambusoides* (*P. quilioi*) or *P. pubescens* (*P. mitis*), and which is reported by Mr. S. B. Dayton, who directed our attention to this grove, to have been introduced from India by Mr. Andre Moynelo about 30 years ago. The tallest culms were in 1915 about 55 feet high and 14¾ inches in circumference, and the grove covers an area of about an acre. The young shoots of this bamboo have been cooked as a vegetable and found to have an excellent flavor and texture. The late Allen Groves is standing among the trees. (Photographed by Mr. Peter Bisset, Burroughs Station, Ga., July 28, 1915; P14013FS.)

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

Grown under irrigation on rich flats along the Wei River. A good market variety apparently."

For an illustration of these eggplants, see Plate V.

40760. SOLANUM MELONGENA L. Solanaceæ. Eggplant.

"(No. 2285a. Paihsiangchen, Shansi, China. August 10, 1914.) A variety of eggplant with medium-large fruits of pure white color. Chinese name *Pai ch'ieh tzŭ*, meaning 'white egg fruit.'"

40761. CAPSICUM ANNUUM L. Solanaceæ. Red pepper.

"(No. 2286a. Shensi Province, China. September, 1914.) Mixed varieties of chili peppers, much grown for condiments and used with every meal, taking the place apparently of meats and gravies with the Chinese country population."

40762. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

"(No. 2287a. Sianfu, Shensi, China. August 22, 1914.) A variety of cucumber of oblong, heavy shape, generally ribbed, able to stand more drought and heat than ordinary cucumbers, but not as fine in quality, having greater seed cavities. Chinese name *Ts'ai kua*, meaning 'vegetable gourd.'"

40763. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

"(No. 2288a. Lanchowfu, Kansu, China. December 28, 1914.) A watermelon, said to be large and very sweet, having dark-red flesh and white seeds. Grown at Chungkwanying, to the north of Lanchowfu. Obtained from Father C. Coppisters, of the Belgian Roman Catholic Mission at Lanchowfu. To be tested in semiarid localities."

40764. CUCUMIS sp. Cucurbitaceæ.

"(No. 2289a. Near Meihsien, Shensi, China. September 9, 1914.) A cucurbit of trailing growth, occurring as a weed in fields. Apparently a primitive form of melon, presumably of botanical interest."

40765. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ. Bermuda grass. (*Cynodon dactylon* Pers.)

"(No. 2290a. Near Madjakey, near Chiehchow, Kansu, China. October 10, 1914.) A grass of very low growth, with running rhizomes found amidst stony débris and on pebbly and sandy wastes along mountain streams, forming a dense mat of turf. Of value apparently as a lawn grass for sandy locations. Does not require any mowing."

40766 and 40767. IRIS ENSATA Thunb. Iridaceæ. Iris.

40766. "(No. 2291a. Near Taipintze, near Taochow, Kansu, China. November 29, 1914.) An Iris of very low growth, found along roadsides at altitudes of 10,000 feet above the sea. Of value as a very hardy herbaceous perennial to line paths and flower beds in parks and gardens in dry and cold localities."

40767. "(No. 2292a. Pingliang, Kansu, China. January 16, 1915.) A low-growing Iris, somewhat more vigorous than the preceding number; otherwise the same remarks apply to it. This Iris is so hardy that frequently cart and mule traffic over it does not destroy it at all, but only stunts the plants somewhat."

40768. ROSA BANKSIAE NORMALIS Regel. Rosaceæ. Rose.

"(No. 2293a. Near Chenghsien, Kansu, China. September 30, 1914.) A wild rose, of very vigorous growth, found as big clumps amidst scrub

40677 to 40770—Continued. (Quoted notes by Mr. F. N. Meyer.)

or as solitary specimens in stony places. Makes long annual shoots, which lean over in a characteristic way. Of value possibly as a stock and as a factor in hybridization experiments. Collected at an altitude of 3,000 feet above the sea."

40769. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"(No. 2294a. Peking, China, March 20, 1915.) Mixed varieties of watermelons, which are grown for their seeds only. These seeds sell on the Peking market at 12 to 14 dollars Mexican silver per 125 pounds. To be tested in semiarid localities. Chinese name *Ta kua*, meaning 'big gourd.'"

40770. INDIGOFERA sp. Fabaceæ.

"(No. 2295a. Near Tanchang, Kansu, China. November 20, 1914.) A small shrub, occurring on stony places, having small racemes of rose-colored flowers; foliage slightly tomentose. Of use as a rockery shrub for dry regions."

40771. HELIOTROPIUM CURASSAVICUM L. Boraginaceæ.
Beach heliotrope.

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Hope Gardens. Received May 17, 1915. Introduced for the studies of Prof. J. C. Arthur, of Purdue University.

Plants.

40772. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**
(*Citrus decumana* Murr.)

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 11, 1915.

"(No. 2296a. March 20, 1915.) A very large pummelo, of pearlike shape; rind very heavy; segments separating easily; flesh dry and sweet, containing many seeds. A dessert fruit in a class by itself." (*Meyer.*)

40773. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received May 19, 1915.

"Wild sorghum from Anse aux Pins, growing in a cemetery." (*Dupont.*)

40774. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael fruit.**
(*Aegle marmelos* Corr.)

From Kandawglay, Rangoon, India. Presented by Mr. J. Gibbons, superintendent, Agri-Horticultural Society of Burma. Received May 19, 1915.

"These seeds are from very good fruits and are quite fresh." (*Gibbons.*)

See S. P. I. No. 38664 for previous introduction and description.

40775. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul general. Received May 17, 1915.

"Violet-colored potatoes from Ecuador." (*Goding.*)

40776 to 40782.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received May 15, 1915. Quoted notes by Dr. Proschowsky, except as otherwise indicated.

40776. ALBIZZIA MOLUCCANA Miq. Mimosaceæ.

For previous introduction and description, see S. P. I. No. 25783.

40777. ALPINIA NUTANS (L.) Roscoe. Zinziberaceæ. **Shell flower.**

"A magnificent ornamental plant, quite hardy here."

"Striking plant, reaching 10 to 12 feet, with long lanceolate, glabrous, long-veined leaves; flowers orchidlike, yellow with pink, sweet scented, in a long drooping terminal spikelike raceme. Fine for foliage masses and an old favorite. Said to grow 20 feet high in southern California in rich soil with plenty of water and to bloom continuously." (*Bailey, Cyclopedia of Horticulture, vol, 1, p. 265.*)

40778. AMERIMNON SISSOO (Roxb.) Kuntze. Fabaceæ.
(*Dalbergia sissoo* Roxb.)

"A deciduous tree of the sub-Himalayan tracts from the Indus to Assam, ascending to 3,000 feet, but probably nowhere in India, strictly speaking, indigenous. Gamble remarks that it is often, however, gregarious on the banks of sandy, stony, torrential rivers. On higher lands it may grow and grow well, though not gregariously unless planted. Cultivated and often self-sown on the plains of India. But even when the trees are growing close together the shade given is light; hence sissu is an important shade tree with tea planters of Dehra Dun. The seed on germinating at once makes a great length of root compared to its growth above ground, a circumstance that greatly minimizes the chance of its being swept away when spontaneous germination takes place within the sandy and stony beds of rivers. Sissu coppices well and reproduces itself freely from suckers. Artificially it is best grown from seed deposited in suitable positions, because transplantation is sometimes difficult and the young trees have to be protected till fairly established. It grows most luxuriantly on low-lying sandy tracts and has been successfully raised on irrigated lands. But it is reputed that the timber of trees raised under irrigation is of poor quality and subject to serious damage by fungi. When young the growth of sissu is very quick; it is said to attain a 2½-foot girth in 12 years, but as it gets older its growth gets slower. The full height of a tree is about 60 feet or so, and in girth it is rarely more than 6 feet. It is very successfully grown in Sind, and is said to be the best hardwood of the Punjab.

"The wood is very durable, seasons well, and does not warp or split. It is highly esteemed for all purposes where strength and elasticity are required, as, for example, agricultural implements, wheelwrights' work, frames of carriages, boat building, etc. At one time it was extensively employed for gun carriages, but owing to the limited supply of the timber it is now very little used for that purpose. It is one of the finest timbers in India for furniture and wood carving, and is in regular demand all over the north of India. In Upper India the shisham wood (*Dalbergia sissoo*) replaces very largely the rosewood (*D. latifolia*) of western and southern India. It attains its position of greatest importance in the United Provinces, the Central Provinces, and the Punjab, being replaced on the north by deodar and to the south by sal and rosewood. The wood

40776 to 40782—Contd. (Quoted notes by Dr. A. R. Proschowsky.)

carving of Seharunpur, Farakhabad, Lucknow, and Nagpur and the inlaid work of Chiniot, Hosiarpur, Jallandhar, and Mainpuri are largely on shisham. In Rajputana, also, this wood is to a considerable extent employed by the wood carvers, but for particulars of the methods of treatment and styles of carving the reader should consult Indian Art at Delhi, 1903 (pp. 103, 108–9). Owing to the fact that the sissu very rarely grows straight, the timber is not of much use for beams, though it is in much demand for knees of boats. It has been successfully tried for railway sleepers; it is an excellent fuel and makes very good charcoal, but it is too expensive to be utilized for these purposes. The wood is said to yield an empyreumatic medicinal oil, and the raspings of the wood are officinal, being regarded as alterative. Near towns the trees are largely lopped for fodder, and the fallen leaves collected and valued as fuel by the sweetmeat makers." (*Watt, The Commercial Products of India, p. 485–486.*)

40779. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

"Quite hardy here and therefore wonderfully useful as a stock upon which to graft good varieties."

40780 and 40781. Cocos ODORATA Barb. Rodr. Phœnicaceæ.

40780. "Selected from the very best of the fruits." Received as *Cocos capitata.*

40781. "Edible and of pleasant taste but many fibers. There should be little doubt that by selection better fruits could be obtained."

40782. SANTALUM ALBUM L. Santalaceæ. **Sandalwood.**

See S. P. I. Nos. 6449 and 8679 for description.

"A small evergreen tree met with in the very dry regions of South India and in North India chiefly as a cultivated plant. It affects open forest lands with grass and patches of other trees, usually frequenting red or stony soils. It is a root parasite on a long series of host plants and hence apparently the difficulties experienced in systematic plantations where provision has not been made for this requirement. On rich soil the plant grows well, but the wood is deficient in odour, consequently inferior commercially. Lushington and other officers of the Forest Department have devoted much careful study to the cultivation of sandal, more especially in relation to the production of the maximum percentage of rich-scented wood. Lushington observes: 'On the whole I am inclined to think that the best way of aiding the reproduction of sandalwood artificially is to increase the scrub, and this is best effected by merely keeping out fire and grazing. As soon as the scrub reaches 2 or 3 feet sandal reproduces naturally from seed dropped by birds, and this may perhaps be further assisted by dibbling.' Rama Rao urges that weeding is dangerous and that only surface pruning when the scrub becomes too dense should be indulged in. Lushington mentions 8 inches' growth in girth per ten years as a safe average and the exploitable age of the tree as forty years, the minimum size being then 32 inches at 4½ feet from the ground." (*Watt, Commercial Products of India, p. 976.*)

40783 and 40784. CUCUMIS SATIVUS L. Cucurbitaceæ.

Cucumber.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Gardens. Received May 19, 1915. Quoted notes by Mr. Hartless.

40783. "This is a variety of the common cucumber of dwarf bushy habit, producing an egg-shaped fruit, dark green and more or less mottled with white markings when young and of the same rusty brown color when ripe. Although not the gherkin of the West Indies, familiar to most persons in its pickled state, its fruit resembles that of the latter; hence its Anglo-Indian appellation. Like the common climbing cucumber, it will succeed in any good soil, but it requires more aid from manure than the former to bear abundantly. When preparing the ground for the reception of the seed, it should therefore be liberally enriched with manure of the farmyard class, then laid out in ridges 6 inches high and 15 inches apart, and the seeds sown along the two sides of the ridges at 3 or 4 inches asunder. The furrows between the ridges should be watered every fourth or fifth day, and the soil stirred and loosened at every opportunity. As the plants yield the immature fruit required at table for only a limited period of time, sowings should be made at intervals of a fortnight from the beginning of March to the end of May. This variety of cucumber is a purely hot-weather crop and does not succeed if sown during the rainy season."

40784. "Long green; rainy season."

40785 to 40787.

From Tiflis, Caucasus, Russia. Presented by the director, Botanic Gardens. Received May 10, 1915.

40785. MESPILUS GERMANICA L. Malaceæ. **Medlar.**
(*Pyrus germanica* Hook. f.)

See S. P. I. Nos. 8298, 27702, and 29197 for previous introductions and description.

"A low deciduous tree of crooked, picturesque habit, usually under 20 feet high; young branchlets very hairy, older ones armed with stiff, straight spines one-half to 1 inch long. Leaves almost without stalks, lanceolate or oval, 2 to 5 inches long, minutely toothed, downy on both surfaces, but more so beneath. Flowers solitary at the end of short leafy branches; about 1 inch across, white or slightly pink, produced on a very short woolly stalk, in May or early June. Petals five, roundish; sepals covered with gray wool, triangular at the base, drawn out into a long, narrow point standing out beyond the petals. Fruit 5 celled, apple shaped, brown, with a broad open eye, surrounded by the persistent calyx, and showing the ends of the bony seed vessels. The wild medlar is a native of Europe and Asia Minor, and is found wild in the woods of several counties in the south of England, notably Sussex and Kent, but it is not believed to be truly indigenous. It has long been cultivated for its fruit in English orchards, and several named varieties exist. The cultivated forms are distinguished by thornless or nearly thornless branches, by larger, broader leaves, and by larger fruits, up to 1½ or 2 inches across. Although much esteemed by those who have acquired the taste for them, medlars are not a popular fruit. They should be left on

40785 to 40787—Continued.

the tree until the end of October or later, then stored in a fruit room until they are 'bletted,' a term given to indicate a state of incipient decay. A jelly made from the fruits meets a more general taste. The medlar is most closely allied to Crataegus, differing in the solitary flower, etc. It is very hardy, and not particular as to soil." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 81.*)

40786. PRUNUS SPINOSA L. Amygdalaceæ. **Plum.**

See S. P. I. No. 38426 for previous introduction and description.

40787. RUBUS ULMIFOLIUS Schott. Rosaceæ.

"A vigorous shrub whose more or less plum-colored, arching stems are clothed with starry down and armed with long, broad-based prickles; they root freely at the tips. Leaves composed of three or five leaflets radially arranged, which are slightly downy above but white-felted beneath, rather finely toothed. Flowers bright rosy red, and produced in showy, cylindrical panicles. This well-marked species is of little value as a fruiting bramble, its berries being small and dryish, but from it several ornamental garden varieties have been obtained. It is widely spread over the United Kingdom (except Scotland) and Europe generally." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 470.*)

40788 to 40797.

From Lima, Peru. Procured from Senor J. A. MacKnight, director, Escuela Normal de Varones. Received May 18, 1915. Quoted notes by Mr. MacKnight.

40788 to 40790. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

40788. Lot 1.

40789. Lot 2.

40790. Lot 3.

40791 to 40796. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Oca.**

40791. Lot 1. "Yellowish white with red spots, fine quality."

40792. Lot 2. "Mottled, white and red, fine quality."

40793. Lot 3. "Yellowish, fine quality."

40794. Lot 4. "Mottled, round, fine quality."

40795. Lot 5. "Red, fine quality."

40796. Lot 6. "Greenish, fine quality."

Tubers.

40797. CHENOPODIUM QUINOA Willd. Chenopodiaceæ. **Quinoa.**

"Of a very fine quality."

40798 to 40802.

From Albano, Stockholm, Sweden. Presented by the director, Botanic Garden. Received May 10, 1915.

40798 to 40800. LATHYRUS spp. Fabaceæ.

Introduced for the breeding experiments of Mr. David Burpee.

40798. LATHYRUS CICERA L. **Everlasting pea.**

Stems usually prostrate or ascending, up to 2 dm. (8 inches) long, slightly winged, glabrous. Leaves with small winged petioles and one pair of leaflets; the upper with simple undivided tendrils, half as long as the leaflets; the lower not cirrose. Leaflets of the lower

40798 to 40802—Continued.

leaves elongate-elliptic, obtuse; those of the upper larger, lanceolate, short mucronate, from less than 1 cm. to about 9 cm. long, 4 to 10 mm. broad. Stipules large, about as long or slightly longer than the petiole, lanceolate, semisagittate. Inflorescence 1 flowered. Flowers up to 1 cm. long, erect or nodding. Petals dull red, of varying length. Standard obovate, emarginate, brown veined, seldom clear, longer than the wings; these longer than the keel. Keel whitish, dull violet on the tip. Europe. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, p. 1006, 1910.*)

40799. LATHYRUS PISIFORMIS L.

See S. P. I. No. 32192 for previous introduction and description.

40800. LATHYRUS SPATHULATUS Celak.

Glabrous plants with ascending, sharply angled stems. The lower stems leafless, the upper remotely leaved. Leaves subdigitate, quaternate, short petioled. Leaflets narrowly linear-lanceolate, mucronate-acuminate, short subciliolate. Stipules narrowly linear, semisagittate, longer than the short petioles. Petioles slender, elongated, much exceeding the leaves, loosely 5 to 8 flowered. Corolla blue; standard obovate-obtuse, much longer than the keel; keel obtuse, not bearded; wings covering and exceeding the keel. (Adapted from *Celakovsky, Oesterreichische Botanische Zeitschrift, vol. 38, p. 6, 1888.*)

40801 and 40802. OENOTHERA spp. Onagraceæ.

Introduced for the work of Mr. H. H. Bartlett in plant breeding.

40801. OENOTHERA ODORATA Jacq. **Evening primrose.**

40802. OENOTHERA PUMILA L. **Small sundrop.**

40803. LATHYRUS CYANEUS (Stev.) C. Koch. Fabaceæ.

From Paris, France. Presented by Prof. Julien Costantin, Musée d'Histoire Naturelle. Received May 10, 1915. Introduced for the breeding experiments of Mr. David Burpee.

This plant is similar to *L. sessilifolius*, but the leaves are more distinctly nerved. The standard is twice longer than the calyx (subequal in *L. sessilifolius.*) The calyx is larger and more retuse at the base. Keel less acuminate. Color of the flowers more intensely blue, with slighter tendency toward purple. The four leaflets are ensiform. (Adapted from *Steven,* in *Mémoires de la Société des Naturalistes de Moscou, vol. 4, p. 91, 1913.*)

40804. RAPHIA TAEDIGERA Martius. Phœnicaceæ. **Palm.**

From San Jose, Costa Rica. Presented by Mr. J. E. Van der Laat, director, Department of Agriculture. Received May 4, 1915.

"Seeds proportionately oily and resinous, so that they have commanded the attention of certain industries in North America." (*Van der Laat.*)

One of the most striking palms which grow in the rich alluvial bottoms along the lower Amazon River. The trunk does not exceed 6 or 8 feet in height and is about a foot in diameter, clothed for the most part with the persistent sheathing bases of the leafstalks. The leaves are feather shaped and are among the largest in the vegetable kingdom, some of them reaching 40 to 50 feet in length and covering a surface of more than 200 square feet. The flowers are of a greenish olive color and densely crowded, and the fruit is about the size of a hen's egg or smaller and is covered with large scales. The leafstalk is 12 to 15 feet long and

4 or 5 inches in diameter, and the smooth glossy rind is split off and used for making baskets and window blinds. The inner portion is used for making shutters, boxes, partitions, and even entire houses. The seed kernels are extremely hard and are said to be suitable for the manufacture of buttons. This palm also grows abundantly in the low marshy lands in the Atlantic coast region of Costa Rica, where it is called *Yolillo*. In the Amazon region it is called *Jupati*. (Adapted from *Martius, Histoire Naturelle des Palmiers vol. 3, p. 217, 1833–1850.*)

40805. Colocasia esculenta (L.) Schott. Araceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received May 13, 1915.

"*Yatsu gashira.*"

"Said by Hon. T. H. Kuwashima, of Tokyo, to be similar in quality to the Trinidad dasheen." (*Fairchild.*)

Received as *Colocasia multiflora*, which seems to be only a trade name.

40806. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Arequipa, Peru. Presented by Mr. Leon Campbell, through Mr. W. F. Wight, of the Bureau of Plant Industry, for breeding work in Texas. Received May 24, 1915.

"Peaches grown from seed and brought into the market by the Indians. Many of them are of excellent quality, and some may prove well adapted to regions susceptible to drought periods and also to regions of extreme heat." (*Wight.*)

40807. Amygdalus persica L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Concepcion, Chile. Presented by Mr. G. F. Arms, through Mr. W. F. Wight, of the Bureau of Plant Industry, for breeding work in Texas. Received May 24, 1915.

"Three varieties which were mixed by a servant while drying them." (*Arms.*)

"Peaches in Chile are grown very largely from seed and are of high quality. This lot was obtained in the market of Concepcion and had been grown without irrigation. Will probably prove of value in dry regions." (*Wight.*)

40808. Cornus macrophylla Wallich. Cornaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received May 22, 1915.

"A deciduous tree, 30 to 50 feet high; young shoots smooth or nearly so. Leaves opposite, ovate to roundish or oblong, the base rounded or tapering, the apex with a slender, often taillike point; 4 to 7 inches long, 2 to 3½ inches wide; bright green, and soon becoming smooth above; glaucous beneath, and at first clothed with pale, flattened, minute hairs attached at their middle; veins in six to eight pairs; stalks one-half to 1¼ inches long. Flowers yellowish white, numerous, produced in terminal, somewhat rounded cymes 4 to 6 inches across; each flower one-half inch diameter; petals oblong; calyx minutely toothed, grey with minute down. Fruit globose, one-fourth inch diameter, blue when ripe. Blossoms during July and August. Native of the Himalayas, whence it was introduced in 1827, China, and Japan. It is a handsome and striking

small tree, chiefly noteworthy for its fine foliage; the flowers, although profusely borne, are of too dull a white to be very effective. There is a tree approaching 40 feet in height in Coombe Wood nursery. Much confusion has existed between this species and *C. controversa* which, although an alternate-leaved species, has long been known on the Continent as *C. macrophylla*." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 390.*)

See S. P. I. Nos. 13994, 13995, and 21971 for previous introductions.

40809. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

From Canton, China. Presented by Prof. G. W. Groff, Canton Christian College, through Mr. F. D. Cheshire, consul general. Received May 24, 1915.

"Obtained in March from a melon of the red variety, grown at Nanhsiung, North River, Kwangtung Province." (*Groff.*)

40810 to 40815.

From Petrograd, Russia. Presented by the director, Imperial Botanic Garden. Received May 21, 1915.

40810 to 40813. LATHYRUS spp. Fabaceæ.

Introduced for the breeding experiments of Mr. David Burpee.

40810. LATHYRUS ANNUUS Hoejer.

Stalks glabrous, prostrate, winged, 2 to 7 dm. long. Leaves with broadly winged petioles. Leaflets 3 to 4 times as long as the petioles, lanceolate, short acuminate. Stipules small, semisagittate, not as long as the petiole. Petals yellow, often reddish on the edges. Standard striped with brown. Keel greenish white. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, pt. 2, p. 1004.*)

40811. LATHYRUS sp.

40812. LATHYRUS sp.

This species was received as *L. lusitanicus* Mart., a name which has not yet been found in the literature of this group.

40813. LATHYRUS PISIFORMIS L.

See S. P. I. Nos. 32192 and 40799 for previous introductions and description.

40814. PÆONIA ANOMALA L. Ranunculaceæ.

Var. *beresowskii* Komar.

40815. PRUNUS PROSTRATA Labill. Amygdalaceæ. **Bush cherry.**

See S. P. I. Nos. 28945 and 37642 for previous introductions and description.

40816 to 40823. CERATONIA SILIQUA L. Cæsalpiniaceæ. **Carob.**

From Valencia, Spain. Presented by Mr. Claude I. Dawson, American consul. Cuttings received May 24, 1915.

40816. "*Matalafera.*"

See S. P. I. Nos. 30914 and 35239 for previous introductions and description.

40816 to 40823—Continued.

40817. "*Casuda.*"

See S. P. I. Nos. 30915 and 35238 for previous introductions and description.

40818. "*Roja Vera.*"

See S. P. I. Nos. 30918 and 35245 for previous introductions and description.

40819. "*Macho de Flor Colorada.* Red-flowered male."

See S. P. I. Nos. 30916 and 35230 for previous introductions and description.

40820. "*Macho de Flor Amarilla.* Yellow-flowered male."

See S. P. I. Nos. 30917 and 35242 for previous introductions and description.

40821. "*Vera.*"

See S. P. I. No. 35240 for previous introduction.

40822. "*Flor de Altramuz.*"

See S. P. I. No. 35244 for previous introduction.

40823. "*Roja Vera.*"

See S. P. I. Nos. 30918 and 35245 for previous introductions and description.

40824. Citrus hystrix DC. Rutaceæ. Wild orange.

From Tutuila, American Samoa. Presented by the governor of American Samoa, through Mr. W. E. Safford, of the Bureau of Plant Industry. Received June 2, 1915.

"Collected April, 1915. Seeds of the wild orange of Samoa, *Citrus hystrix* DC. (*Citrus aurantium saponacea* Safford, Contr. U. S. National Herb., vol. 9, p. 226, 1905), called *moli* or *moli vao* (forest moli) or *moli u'u* (anointing moli) by the natives, who use it for washing. On account of its use as a detergent the name *moli* is applied by the Samoans to soaps of all kinds. The *moli vao* is a thorny tree growing spontaneously in the forests of Samoa, where it was undoubtedly established in prehistoric times. It also occurs in Fiji, and bears the same common name there. The glossy dark-green leaves have a crenate margin and a very broadly winged petiole, sometimes almost as large as the leaf itself. The flowers occur in axillary or terminal clusters. The smooth spheroid fruit is usually greenish yellow or lemon colored. The pulp is pleasantly aromatic, but not edible. It leaves a peculiar fragrance in the hair when used as a shampoo, and the natives say that it prevents dandruff and stimulates the growth of the hair. They make an infusion of the scraped bark of the tree as a remedy for pectoral affections and use a hot decoction of the leaves for asthma. This species is introduced as a possible stock for other less robust species of Citrus." (*Safford.*)

40825 to 40827.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received June 2, 1915.

40825. Artocarpus integra (Thunb.) L. Moraceæ. Jack fruit. (*Artocarpus integrifolia* L.)

See S. P. I. Nos. 27170 and 38890 for previous introductions and description.

40825 to 40827—Continued.

40826. DURIO ZIBETHINUS Murray. Bombacaceæ. **Durian.**

See S. P. I. Nos. 28082, 34073, 37103, and 39709 for previous introductions and description.

40827. CANARIUM INDICUM Stickman. Balsameaceæ.
(*Canarium commune* L.)

See S. P. I. Nos. 20808, 21280, and 25684 for previous introductions and description.

"A large, handsome Malayan tree, characterized by a remarkable buttressed trunk and laterally compressed aerial basal roots; the latter develop enormous erect flanges of uniform thickness, so that solid circular pieces may occasionally be cut out from them to form ready-made cart wheels. The tree is much cultivated for shade or ornament in Java. It bears in great abundance large pendent clusters of dark-purple fruits, which are of the size of small plums; these are produced all the year round, but chiefly in June. The kernel of the fruit is edible, being similar in flavor to sweet almonds; it yields by expression an oil used for burning in lamps and for cooking purposes. A desirable tree for planting in avenues, etc. It thrives in hot and moist districts up to about 1,500 feet elevation and prefers deep, well-drained soil. Propagated by seed, which may be sown in nursery beds and kept moist and shaded until germinated." (*MacMillan, Handbook of Tropical Gardening and Planting.*)

40828 and 40829.

From Japan. Presented by Mr. Risaburo Ota, Hamamatsu, Shizouka Ken, Japan. Received May 28, 1915.

40828. CUCUMIS SATIVUS L. Cucurbitaceæ. **Cucumber.**

"A fine Japanese cucumber."

40829. CUCURBITA PEPO L. Cucurbitaceæ. **Squash.**

"*Chirimen.* A squash from Japan of very fine quality."

See S. P. I. Nos. 25594 and 26427 for previous descriptions.

40830. MALUS SYLVESTRIS Miller. Malaceæ. **Apple.**

From Angol, Chile. Presented by Mr. Manuel V. Bunster. Received May 29, 1915.

"Seeds of our *Huidobro* apple, which is quite as resistant to the woolly aphis as your *Northern Spy*. This apple is sweet and pleasant to eat and is esteemed by Chileans, but, nevertheless, to my taste, it can not compete with the *Newtown, Baldwin, Northern Spy*, or any other first-class European or American apple. These seeds have been extracted from picked apples, and you will find them very plump. This apple is ideal for those people who are too lazy to spray the trees. They bear early and heavily." (*Bunster.*)

40831. MACADAMIA TERNIFOLIA F. Mueller. Proteaceæ.

Queensland nut.

From Sydney, New South Wales. Purchased from Anderson & Co. Received at the Plant Introduction Field Station, Chico, Cal., May 29, 1915.

See S. P. I. Nos. 18382, 33912, and 34437 for previous introductions and description.

40832. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. **Sorghum.**

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, Department of Agriculture, Pretoria, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received June 7, 1915.

Collected at our station at Tzaneen in northern Transvaal. (*Pole Evans.*)

40833. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*Perilla ocymoides* L.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received June 3, 1915.

See S. P. I. Nos. 22419, 27558, and 30298 for previous introductions and description.

40834. JUGLANS PORTORICENSIS Dode. Juglandaceæ. **Porto Rican walnut.**

From Porto Rico. Presented by Mr. D. W. May, Agricultural Experiment Station, Mayaguez. Received June 5, 1915.

See S. P. I. No. 40236 for previous introduction and description.

40835 and 40836. ANNONA spp. Annonaceæ.

From Cajabon, Guatemala. Presented by Mr. W. E. Curley, at the request of Mr. O. F. Cook, of the Bureau of Plant Industry. Received June 3, 1915.

40835. ANNONA SCLERODERMA Safford. **Custard-apple.**

"*Pox-te.*"

See S. P. I. No. 40305 for previous introduction and description.

40836. ANNONA RETICULATA L. **Custard-apple.**

"*Red pox.*"

40837. PASSIFLORA LAURIFOLIA L. Passifloraceæ. **Passion fruit.**

From Honolulu, Hawaii. Presented by Mr. Garret P. Wilder. Received May 29, 1915.

"This strong-growing, glabrous vine, climbing by tendrils, is a native of tropical America and known there as the *yellow water-lemon.* The date when it was introduced to Hawaii and by whom is not known, but in the Hilo and Hamakua districts of Hawaii this variety grows wild. Its thick leaves are oval, oblong, and entire, and have a short, sharp point. The flowers are about 2½ inches across, are white with red spots on them. The fruit is slightly oblong, 2 inches in diameter, and very regular in size and shape. When ripe, it is yellow, spotted with white. It has a medium-hard shell or skin, and the edible pulp is whitish yellow and contains many flat, black seeds." (*G. P. Wilder, Fruits of the Hawaiian Islands, p. 214.*)

40838. CEDRELA ODORATA L. Meliaceæ. **Cedro.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station, at the request of Mr. H. A. Van Hermann. Received June 1, 1915.

See S. P. I. Nos. 11769 and 26178 for previous introductions and description.

40839. (Undetermined.) **Monkey bread.**

From Mt. Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received June 1, 1915.

40840. Brassica pekinensis (Lour.) Skeels. Brassicaceæ. **Pe-tsai.**

From Chefoo, China. Presented by Mr. A. Sugden, Commissioner of Chinese Customs, through Mr. John F. Jewell, American consul. Received May 27, 1915.

"Shantung cabbage."

40841. Telopea speciosissima (Smith) R. Brown. Proteaceæ. **Waratah.**

From Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received June 1, 1915.

See S. P. I. Nos. 15696 and 40064 for previous introductions and description.

"Although this beautiful and very uncommon evergreen shrub was introduced from the Blue Mountains of New South Wales as long ago as 1789, it has been seen very rarely in flower in Engiand. The deep-crimson, tubular flowers are about 1 inch long, and are borne in a dense globular head surrounded by an involucre of ovate-lanceolate blood-red bracts, each measuring from 2 to 3 inches in length. The firm leathery leaves are cuneate-oblong in shape and measure about 6 inches long by 1½ inches broad. They are toothed in the upper part and are dark green above and paler below." (*Proc. Royal Hort. Soc., vol. 40, p. 130, 1915.*)

40842. Phyllostachys sp. Poaceæ. **Bamboo.**

From Burroughs, Ga. Plants secured by Mr. Edward Simmonds, through Mr. S. B. Dayton, Savannah, Ga. Received June 5, 1915.

"From J. T. Smith's place, Burroughs, Ga. A bamboo reported to have been brought from India in 1890 and planted near Savannah, where it attains a height of at least 50 feet and a diameter of 3 inches." (*Dayton.*)

For an illustration of the Smith bamboo grove, see Plate VI.

40843. Passiflora alata Curtis. Passifloraceæ. **Passion fruit.**

From Honolulu, Hawaii. Presented by Mr. Garret P. Wilder. Received June 9, 1915.

"This is a strong, vigorous vine, very suitable for arbors and trellises. It is not commonly found in Hawaii; however, a very fine specimen of its kind is growing in Dr. St. D. G. Walter's garden in Honolulu. The leaves are oval to ovate, the petioles having two glands. The fragrant purple flowers are about 2 inches in diameter. The ovoid-pointed fruit has a tough, leathery shell, which, when green, is 6 striated, with white stripes; when quite ripe the fruit is a dull orange-yellow. The numerous seeds are imbedded in the juicy, scented pulp, which is aromatic and delicious. Propagation is by seed and by cuttings." (*G. P. Wilder, Fruits of the Hawaiian Islands.*)

40844 and 40845.

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received June 7, 1915.

40844. CLEMATIS STANLEYI Hooker. Ranunculaceæ. **Clematis.**

"An erect, robust herb, 3 feet in height with biternate, silky, wedge-shaped leaves and large white to pink-purple flowers, 1 to 3 inches across." (*Davy.*)

40845. PROTEA sp. Proteaceæ.

40846 and 40847. PHASEOLUS LUNATUS L. Fabaceæ. **Madagascar butter bean.**

From Marseille, France. Presented by Dr. E. Heckel, Colonial Institute, through the American consul general. Received May 29, 1915.

40846. "Speckled with red." 40847. "White."

40848. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received June 22, 1915.

"Seeds of wild sorghum collected at Anse aux Pins, Mahe, Seychelles. The three species got mixed while drying." (*Dupont.*)

40849. MISANTECA TRIANDRA (Swartz) Mez. Lauraceæ.

(*Acrodiclidium jamaicense* Nees.)

From Miami, Fla. Presented by Mr. D. Sturrock. Received June 12, 1915.

"A tall ornamental and shade tree with flaky bark and dense lustrous foliage; leaves elliptic-oblong. Native of the Antilles. Does well in southern Florida." (*Sturrock.*)

"This species has the foliage of *M. capitata* with the inflorescence of *M. anacardioides.* It is referred both by Grisebach and by Meissner to *Acrodiclidium jamaicense*, as a broad-leaved variety, and is, indeed, very nearly allied to that species, which seems to connect the two genera, as the thick stamens are more or less united at the base, though free at the summit. It has, however, the large glands at the base of the stamens of *Acrodiclidium*, although no staminodia as in most Misanteca." (*Hooker, Icones Plantarum, vol. 3, p. 47.*)

40850. LITCHI CHINENSIS Sonner. Sapindaceæ. **Litchi.**

(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Purchased from Mr. J. E. Higgins, horticulturist, Hawaii Experiment Station. Received June 24, 1915.

See S. P. I. Nos. 36042, 36066, and 38779 for previous introductions and description.

40851. PHYLLOSTACHYS sp. Poaceæ. **Bamboo.**

From Savannah, Ga. Presented by Mr. S. B. Dayton. Received June 24, 1915.

This plant is supposed to be the same variety as S. P. I. No. 40842.

40852 and 40853.

From Guemes, Argentina. Presented by Mr. H. F. Schultz, director, Agricultural Experiment Station, through Mr. Eli Taylor, American vice consul, Buenos Aires, Argentina. Received June 21, 1915. Quoted notes by Mr. Schultz.

40852. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

"I returned last night from a trip to Jujuy, where I found another variety of edible Passiflora, which, I think, is superior to the variety I mailed you before. The fruit is roundish, smooth, and of a very attractive yellow color, of a rather pale shade, and not unlike a *Yellow Richard* apple. The fruit is slightly larger than S. P. I. No. 40075, measuring about 7 to 8 cm. in diameter. The pulp is bluish purple in color and, in my opinion, a little more spicy than the other variety. The proprietor, however, claims that S. P. I. No. 40075 is a better fruit, which proves again that 'de gustibus non est disputandum.' The plants are very precocious and good, strong growers, for which reason they should be planted about 8 meters apart and be trained on four or five wires, a foot apart each, the upper one about 1.80 m. high. I do not know where the variety originally came from. A friend of the proprietor purchased some fruits in Covent Garden, London, and brought him the seeds. The price for the fruit there at that time was two pence each, while the fruits of the Queensland variety sold at three pence each."

40853. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. **Mistol.**

"A small tree with spiny, tortuous branches; subrotund, coriaceous, minutely serrulate leaves; inconspicuous flowers; and small edible drupes with large stones. Introduced as a possible stock for the Chinese jujube and for comparison with the Brazilian *Jua* (*Ziziphus joazeiro*). Found throughout northern Argentina as far south as the Province of Cordova."

40854 to 40873.

From China. Purchased from Dr. Camillo Schneider, Arnold Arboretum, Jamaica Plain, Mass. Received June 14, 1915. Quoted notes by Dr. Schneider, except as otherwise indicated.

40854 and 40855. (Undetermined.) Lauraceæ.

40854. "(No. 422.) From Talifu, Yunnan, China. Cultivated and grows wild, shrub 3 to 5 m., fruits ovate-elliptic, dark red. October, 1914."

40855. "(No. 422.) From Talifu, Yunnan, China."

40856. PUNICA GRANATUM L. Punicaceæ. **Pomegranate.**

"(A.) Cultivated. From Talifu, Yunnan, China."

40857. PRIMULA LITTONIANA G. Forrest. Primulaceæ. **Primrose.**

"(No. 609.) From Talifu, Yunnan, China."

"*P. littoniana*, though by no means the most beautiful of the new hardy Chinese primulas, has an altogether unique character that is bound to carry it into a permanent place in the heart of the primrose lover. The small lilac blossoms, as well as the lilac leaves, are somewhat like those of *P. denticulata*, but here resemblance ceases. Instead of the usual primula umbel, the scape terminates in a long flower spike, set thickly with bloom. The calyces are a rich maroon and the remarkable

40854 to 40873—Continued. (Quoted notes by Dr. C. Schneider.)

effect comes when these form a point above a sort of ruff of the lilac blossoms. Small wonder that it fairly dazzled George Forrest, the collector, when he found it massed naturally in the high mountains of China. There the flower stalks sometimes rise to a height of 2½ feet." (*H. S. Adams, Garden Magazine, May, 1914.*)

40858 and 40859. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

40858. "(No. 448.) From Talifu, Yunnan, China. Cultivated. Fruits large, round; yellowish red when ripe. October, 1914."

40859. "(No. 449.) From Talifu, Yunnan, China. Cultivated. Fruits large; yellowish red when ripe."

40860. LAGENARIA VULGARIS Ser. Cucurbitaceæ. **Calabash gourd.**

"(No. 450.) Cultivated cucurbit. Fruit green and pale yellow."

40861. CUCURBITA PEPO L. Cucurbitaceæ. **Pumpkin.**

"(No. 452.) From Talifu, Yunnan, China. Cultivated. Fruits large; yellowish red when ripe."

40862. VITIS sp. Vitaceæ.

"(NC.) From Talifu, Yunnan, China."

Introduced as a small-fruited kaki, but evidently there is some mistake.

40863. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

"(B.) From Talifu, Yunnan, China. The common form, cultivated."

40864. AMYGDALUS sp. Amygdalaceæ. **Wild peach.**

"(No. 549.) From Likiang, China. Semiwild and planted. September, 1914. Fruits yellowish."

40865 to 40871. PYRUS sp. Malaceæ. **Pear.**

40865. "(D.) From Talifu, Yunnan, China. Cultivated pear, Talifu market, October, 1914. Yellow with brown points, 7 cm. long by 8 cm. broad. All these seeds from 50 fruits."

40866. "(E.) Cultivated pear, Talifu market, October, 1914. Yellowish brown, sun side red, 7 cm. long by 7 cm. broad. Seeds from more than 50 fruits."

40867. "(F.) From Talifu, Yunnan, China. Cultivated pear, similar to S. P. I. No. 40865 but thicker, 6.5 cm. long by 10 cm. broad."

40868. "(G.) Cultivated pear, Talifu market, October, 1914. Yellow with red (sun side), numerous fine dark points, 5.5 cm. long by 8 cm. broad."

40869. "(H.) Cultivated pear, Talifu market, October, 1914. Leather-colored, light points, 7 cm. long by 8.5 cm. broad."

40870. "(K.) Cultivated pear, Talifu market, October, 1914. Yellow and red, fine points, 7 cm. long by 9 cm. broad."

40871. "(L.) Cultivated pear, Talifu market, October, 1914. Yellow, fine points difficult to see, 8 cm. long by 12 cm. broad."

40872. MIRABILIS JALAPA L. Nyctaginaceæ. **Marvel of Peru.**

"(No. 399.) From Talifu, Yunnan, China, October, 1914."

See S. P. I. Nos. 24033 to 24044 for previous introductions.

40873. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

"(No. 537.) Talifu, Yunnan, China. October, 1914."

40874. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. **Wampi.**
(*Clausena wampi* Oliver.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Experiment Station. Received June 28, 1915.

See S. P. I. Nos. 38708 and 39568 for previous introductions and description.

40875 and 40876. LATHYRUS spp. Fabaceæ.

From Buenos Aires, Argentina. Presented by Mr. Benito J. Carrasco, director general, Botanic Gardens. Received June 28, 1915.

40875. LATHYRUS MAGELLANICUS Lam.

"Usually perennial. Stem 3 to 5 feet long, smooth, angled, somewhat branched; leaflets ovate or oblong-linear; tendrils branched; stipules cordate-sagittate, broad; peduncles long, 3 to 4 flowered, flowers dark purple-blue. A strong-growing, woody, almost evergreen species covered with a bluish bloom. Since it is a maritime plant, salt is said to assist its growth. It is sometimes regarded as an annual." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1826.*)

40876. LATHYRUS NERVOSUS Lam.

"Glabrous plants with stems about 1 foot long. The leaves are composed of two nearly sessile, large, oval, acute leaflets having conspicuous reticulate nerves. Tendrils trifid. Stipules large, sagittate, nerved, somewhat shorter than the leaves. Peduncles solitary, 2 inches long, bearing 5 to 7 purple flowers." (*Lamarck, Encyclopedia, vol. 2, p. 708.*)

40877 and 40878. ZIZIPHUS JUJUBA Miller. Rhamnaceæ.
(*Ziziphus sativa* Gaertn.) **Jujube.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 11, 1915. Quoted notes by Mr. Meyer.

40877. "(No. 120b. From Pinchow, Shensi, China. January 20, 1915.) A very good quality of jujube, having large and heavy fruits of elongated shape; considered to be the second best in China, the *Ta yüan tsao* of Paihsiangchen, Shansi, coming first. Chinese name *Chin tsao* and *Fei tsao*, meaning 'Golden jujube' and 'Fat jujube.' Scions sent under No. 1252 [S. P. I. No. 40506]."

40878. "(No. 121b. From Lingpao, Honan, China. January 31, 1915.) A medium-large variety of jujube, of round-flattened shape and of brown-red color. Meat sweet, but of loose texture; much used baked in bread and boiled with millet. Chinese name *Ta hung tsao*, meaning 'large red jujube.' Apparently the same as sample 77b, of which scions were sent under No. 1058 [S. P. I. No. 37476]."

40879. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Acting Director of Agriculture. Received June 11, 1915.

"*Spanish Zarraceno* or *Candeal*. Grown in Cagayan Province. Introduced into the Philippines 50 years ago. Is planted at end of rainy season; is grown on high lands and matures in 90 days." (*Hernandez.*)

See S. P. I. No. 39152 for previous introduction.

40880. ZINZIBER OFFICINALE Rosc. Zinziberaceæ. **Ginger.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received June 30, 1915.

"(No. 1256. Peking, China. May 6, 1915.) A variety of wet-land ginger, said to come from southern China, retailing in Peking at 10 cents (Mexican silver) per catty of 16 ounces. Much used shredded in various diseases as a condiment." (*Meyer.*)

Rhizomes.

40881. ACROCOMIA FUSIFORMIS (Swartz) Sweet. Phœnicaceæ.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received June 28, 1915.

"*Macaw tree* of Jamaica, *Corozo de Jamaica* of Cuba. Trunk 10 to 30 feet high, fusiform or swollen above the middle, armed with spines in rings. Leaves pinnate, petioles and rachis densely armed. Inflorescence inclosed in two spathes, inner complete, sparingly armed. Peduncles also armed with long black spines. Fruit depressed globose, about 1 inch in diameter, smooth. Seed very hard, 1 celled, foramina lateral. A remarkably strong fiber called *pita de corozo* is extracted from the rachis of the leaves of this palm and is used in Cuba in the manufacture of brushes." (*C. B. Doyle.*)

Erroneously referred to *Acrocomia lasiospatha* by Martius and Grisebach.

40882 to 40885. ORYZA SATIVA L. Poaceæ. **Rice.**

From Athens, Greece. Presented by the Société Royale D'Agriculture Hellénique. Received June 16, 1915.

40882. "*Ostylia.* Thessalian Lazarina rice."

40883. "*Beloca.* Thessalian Lazarina rice."

40884. "No. 43. Seed of Macedonia Edessa rice."

40885. "No. 44. Seed of Macedonia Edessa rice."

40886 to 40889.

From Calcutta, India. Presented by Mr. William Bembower, Collins, Ohio. Received June 25, 1915.

40886. BAMBOS TULDA Roxb. Poaceæ. **Bamboo.**

"The common bamboo of Bengal, where it grows in great abundance everywhere, flowering in May. Not uncommon in the deciduous forests of Pegu, generally occupying lower and moister stretches of ground in company with *tinwa*, *Cephalostachyum pergracile*, the dry hills surrounding being covered with *Dendrocalamus strictus*." (*Brandis.*)

"An evergreen or deciduous, cæspitose, arboreous, gregarious bamboo. Culms green or glabrous when young, gray-green when older, sometimes streaked with yellow, 20 to 70 feet high, not or little branched below; 2 to 4 inches in diameter; nodes not swollen, the lower ones fibrous rooted; internodes 1 to 2 feet long, white scurfy when very young, ringed with white below the nodes, the walls thin, 0.3 to 0.5 inch; branches many from nearly all nodes, those of lowest ones thin, nearly leafless, horizontal." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 30.*)

See S. P. I. Nos. 19269 and 21002 for previous introductions and description.

40886 to 40889—Continued.

40887. CEPHALOSTACHYUM PERGRACILE Munro. Poaceæ. Bamboo.

"A deciduous arboreous, tufted bamboo, with glaucous-green culms 30 to 40 feet high, 2 to 3 inches in diameter, and rather thin walled, the walls usually about one-half inch thick. It is one of the chief bamboos of Burma and one of those most frequently found in association with teak." (*Brandis.*)

"This beautiful species is probably the most common of all Burmese bamboos except *Dendrocalamus strictus*, and, as I am informed by J. W. Oliver, it may be found almost any year flowering sporadically like *D. strictus* and *D. hamiltonii*, but not generally producing good seed on such occasions. The Kolhan and Assam localities would point to its having a wider range than is generally supposed. The culms are largely used for building and mat making and other purposes, and in Burma the joints are used for boiling kauknyin or glutinous rice, the effect being to make a long mold of boiled rice which can be carried about to be eaten on journeys. It is at once recognized by the characteristic inflorescence, the short sheaths with rounded, long-fringed auricles, and long bifidly mucronate palea." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 109.*)

See S. P. I. Nos. 21236 and 21943 for previous introductions and description.

40888. DENDROCALAMUS HAMILTONII Nees and Arnott. Poaceæ. Bamboo.

"A common bamboo in the eastern Himalayas from Kumaon to Assam. It is generally a tall grass 40 to 60 feet in height, but sometimes found as a long and tangled bush. The young shoots are used as food, being boiled and eaten in Sikkim, Bhutan, and Assam. The haulms are large, 3 to 6 inches in diameter, rather hollow, and not always straight, but they are used for every variety of purpose." (*Brandis.*)

"This is the common bamboo of the Darjiling Hills and Terai, of the Duars and the Assam Valley, and is in universal employment for building and basket and mat work, though as a building bamboo its comparative softness and thin walls make it inferior to such species as *B. tulda* and *balcooa*. The young shoots are eaten as a vegetable. The inner layer of the culm sheath is used for covering Burmese cigarettes. This bamboo flowers usually sporadically, so that clumps in flower may almost always be found, and consequently it has been largely and often collected; at the same time, like other species, it sometimes flowers gregariously, as it is doing this year (1894) both in Sikkim and in Dehra Dun. Of its straggling habit, so noticeable in the forests of Bengal and Burma, but curiously much less so in the Dun, J. W. Oliver remarks, 'When they have no trees to support them the main stems bend over, forming impenetrable thickets, and the lateral branches ascend vertically, often forming shoots nearly as long as the main stems.' This species is very easily identified by its panicle of bright purple-red flowers; and when out of flower the gray stems, long, nearly glabrous stem sheaths, and straggling habit cause it to be easily recognized. The long, hairy points to the anthers are also remarkable." (*J. S. Gamble, Bambuseæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 85.*)

See S. P. I. Nos. 38736 and 39178 for previous introductions.

40886 to 40889—Continued.

40889. DENDROCALAMUS STRICTUS (Roxb.) Nees. Poaceæ. **Bamboo.**

"A very useful and strong bamboo of India, formerly used universally for spear staffs. The plant flowers frequently and does not die down after flowering, as is the case with so many bamboos. The culms are said sometimes to reach a height of 100 feet." (*Brandis.*)

"This is the most common and most widely spread and most universally used of the Indian bamboos, and is commonly known as the 'male bamboo.' Its culms are employed by the natives for all purposes of building and furniture, for mats, baskets, sticks, and other purposes. It furnishes, when solid culms are procurable, the best material for lance shafts. In Burma, when large culms are obtainable, they are much in request for masts for native boats. It flowers gregariously over large areas, as it did in the Central Provinces in 1865, but it may be found flowering sporadically, a few clumps at a time, almost every year, in any locality, and such clumps then usually die off. These flowerings, however, do not produce as much good seed as when the gregarious flowering takes place. The flowers appear in the cold season between November and April, the seed ripening in June. The leaves fall in February or March, and the young new ones appear in April. The young culms are rather late, usually beginning to appear in July some time after the rains begin." (*J. S. Gamble, Bambuscæ of British India.* In *Annals of the Calcutta Museum, vol. 7, p. 79.*)

See S. P. I Nos. 21548, 23476, and 37223 for previous introductions.

40890 and 40891. DIASPYROS spp. Diospyraceæ.

From Lal Bagh, Bangalore, India. Presented by Mr. William Bembower, Collins, Ohio. Received June 25, 1915.

40890. DIOSPYROS sp.

Received as *Diospyros embryopteris*, for which we are using the name *Diospyros peregrina*, with which the seeds do not agree.

40891. DIOSPYROS MONTANA Roxb.

"A deciduous and small erect tree, growing to a height of about 30 feet. Is quite ornamental and useful where small trees are desirable." (*Bembower.*)

See S. P. I. Nos. 31644, 32799, and 35084 for previous introductions and descriptions.

40892. DIOSCOREA ACULEATA L. Dioscoreaceæ.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Tubers received June 2, 1915.

"No. 19-1017. *Tugue.* Flesh white and mealy, but firm and a little fibrous; sweetish. The quality is not equal to that of the *Yampi* of Jamaica." (*R. A. Young.*)

40893. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From Nagasaki, Japan. Collected by Mr. W. T. Swingle, of the Bureau of Plant Industry. Received by the Office of Crop Physiology and Breeding Investigations, June 26, 1915.

"I found at Nagasaki Experiment Station a most excellent pummelo, the *Hirado Buntan*, better than the Hongkong pummelo, though not seedless. I

send seeds from a choice fruit given me at the experiment station May 23. The pith of the fruit is small and solid, the color like a good grapefruit." (Extract from *letter from W. T. Swingle, dated "Off Shanghai, China, May 25, 1915."*)

40894 and 40895. CRACCA spp. Fabaceæ.

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent, Royal Botanic Gardens. Received June 29, 1915.

40894. CRACCA CANDIDA (DC.) Kuntze.
(*Tephrosia candida* DC.)

"Well known in the East as *Boga-medelloa*. This grows rapidly and attains a height of 8 to 10 feet or more. It is a favorite plant for planting among crops for green manuring and is probably the best for the purpose in tropical latitudes." (*Macmillan.*)

40895. CRACCA VILLOSA PURPUREA (L.) Kuntze. **Kavalai.**
(*Tephrosia purpurea* Pers.)

"A perennial herb, 1 or 2 feet high, with few-flowered racemes of purplish pink flowers, used in the low country of Ceylon as a green manure and in the dry regions as a mulch and sand binder. A decoction of the bitter root is used by the Hindoos for dyspepsia, diarrhea, and flatulence. (Adapted from *Macmillan, Handbook of Tropical Gardening,* and *Lanessan, Les Plantes Utiles.*)

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BUREAU OF PLANT INDUSTRY.
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1915.

(No. 44; Nos. 40896 to 41314.)

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1915 (NO. 44; NOS. 40896 TO 41314).

INTRODUCTORY STATEMENT.

This inventory covers the period between July 1 and September 30, 1915, and describes 419 introductions, the major part of which have been secured by correspondence.

There is, however, one notable collection, made by Mr. O. F. Cook in the Peruvian Andes, where he was sent as a representative of the Department of Agriculture on the Yale-National Geographic Society Peruvian Expedition to find out the character of the agriculture of the peoples who produced such remarkable terraced hillsides as those in the region back of Cuzco. (See National Geographic Magazine, vol. 29, pp. 474–534, May, 1916.) Mr. Cook's collections furnish striking evidence of the antiquity of these peoples, through the variety and character of their food plants, in particular their highly developed root crops, some of which appear to be nearly as important to the present inhabitants of this mountain region as does the potato itself. The great variety in shape and color of the potato, which is a staple crop there, and the distinctive names by which these many forms are known are further evidence of the age of the civilization through which this most remarkable of all food vegetables was introduced into universal cultivation. The immense value of this one Peruvian tuber, which has met with such success throughout the world, should encourage us to look more closely at the other root crops which were developed probably by the same people who developed the potato. Mr. Cook's collections will assist us in doing this and in discovering the regions in this country sufficiently similar climatically to that of the high Peruvian altitudes where these crops are grown to make it possible to establish these new root crops in America. Our high altitudes are unfortunately much warmer than the Peruvian in summer and incomparably colder in winter. Mr. Cook believes that the cool coastal climate of southern California ap-

NOTE.—This bulletin is intended for distribution to the agricultural experiment stations and the more important private cooperators of the Department of Agriculture.

proaches most nearly that of the Peruvian region of any in the United States. Of the collections listed in this inventory, the following deserve special mention here:

A cultivated variety of *Canna edulis* (Nos. 41100 and 41187) with green and white tubers and scarlet flowers, which deserves trial as a crop for the production of arrowroot; a wild strawberry (No. 41102) from an altitude of 8,000 feet, near Tocontoy, in which strawberry breeders may be interested; two species of Escallonia (Nos. 41105 and 41112), ornamental trees likely to thrive on the Pacific coast; a large tree species of Solanum, which in winter, when frosts are of almost nightly occurrence, produces large clusters of attractive pendent bell-shaped flowers, yellowish outside and rich violet within (No. 41106); an undescribed species of Eugenia, forming an extremely beautiful tree with fine glossy foliage contrasting with its light-colored, graceful trunk and branches (No. 41110); a handsome species of Malaceæ (Hesperomeles) having hollylike evergreen foliage and clusters of red berries (No. 41111); the Quita naranjo, a shrub bearing clusters of white flowers followed by orange-yellow fruits, which give it a remarkable resemblance to the orange tree and may make it valuable as an outdoor shrub and for greenhouse use as well (No. 41113); a shrub of the genus Solanum, producing clusters of attractive blue flowers, which it holds throughout the winter, even in dry exposed places where frosts occur every night (No. 41117).

The three varieties of Manihot which Mr. Cook has secured from the high altitudes (3,000 to 6,000 feet) in Peru and from the temperate region of Lima may prove so early maturing as to be of commercial importance in Mississippi and Louisiana, where the varieties that require a longer season are generally unsuccessful (Nos. 41103, 41121, and 41122).

The oca (*Oxalis tuberosa*, Nos. 41168 to 41176) is a tuber-bearing crop which in some districts of Peru stands second only to the potato in economic importance. There are many varieties of it, and it is eaten raw, cooked, or after being frozen and dried. It might become popular for salads or pickles, and, since its native habitat indicates that it may prove adapted to acid soils, it may possess certain distinct advantages for cultivation on soils not now occupied by any crop in this country.

The ulluco (*Ullucus tuberosus*, Nos. 41177 to 41184) is another tuber-bearing plant which is grown in the highlands of Peru and Bolivia and is represented by many varieties and is employed extensively in soups. It is a relative of the well-known Madeira vine, but the cultivated varieties do not grow so rankly as this species, resembling more in habit the sweet-potato vine.

Still another Andean tuber is the anyu (*Tropaeolum tuberosum*, Nos. 41185, 41186, and 41195), which is inferior to those already men-

tioned, according to Mr. Cook, but has very remarkable keeping qualities, tubers of it remaining fresh after an exposure of more than six months to room temperatures. Mr. Cook suggests that it might be hybridized with the flowering nasturtiums of our gardens and produce new varieties which could be perpetuated by tubers.

The fourth root crop described by Mr. Cook is the llacono (*Polymnia sonchifolia*, No. 41188), which belongs to the sunflower family and produces tubers resembling sweet potatoes in shape, but tasting like the Jerusalem artichoke.

Although Peru is recognized generally as the home of the potato, it is doubtful whether even the American breeders have known the extent to which the potato has been developed by the inhabitants of the Andes. Mr. Cook's collection of 47 varieties (Nos. 41197 to 41243), each with a distinctive native name, gives some indication of the development which has taken place in the home of the potato.

Of material received from Mr. Frank N. Meyer, who was exploring in the region south of Shanghai, little is described in this inventory. The most interesting appears to be a variety of the nagi (*Myrica rubra*, No. 41256), which bears fruits as large as crab apples, of a dark-purple color, extremely attractive appearance, and fine flavor. Mr. Meyer's investigations near Hangchow, China, show that this species of fruit tree exists in numerous varieties and constitutes a new crop which deserves to be tested on well-drained soils in our Gulf States.

Mr. Wilson Popenoe, during a brief visit to Cuba, studied the Cuban varieties of the mango and avocado and sent in what from his experience with Florida and California conditions he believes to be the most promising Cuban varieties of these fruits (Nos. 40911, 40912, 40920, 40921, and 40978 to 40982). He recommends as a new ornamental tree and for trial as a stock for the mango the nariz (*Anacardium excelsum*, No. 40987).

The newly aroused interest in the chayote (*Chayota edulis*) makes the collection of six selected varieties from San Jose, Costa Rica (Nos. 41135 to 41140), of unusual importance, and Mr. Wercklé's remark that over 100 pounds of the edible roots are dug from a single plant of certain green-fruited varieties calls attention to a portion of the plant which has not yet been utilized by us.

The time may not have arrived when plantations of tropical forest trees grown for their timber will be a paying proposition, but when it does the ucuúba (*Virola surinamensis*, No. 41255), which the veteran student of tropical agriculture, the late Doctor Huber, considered the most useful tree of the Amazon region, will come in for consideration. Its easily worked, moderately hard wood, as also its seeds, which furnish a kind of vegetable wax rich in stearin, may make it eligible for plantation purposes.

Bambos tulda, a species of Burmese bamboo, which was introduced in 1907 from the Royal Botanic Garden, Sibpur, Calcutta (No. 21002), has been so successful both in the Canal Zone and in Porto Rico that the introduction by Dr. Proschowsky of what appears to be a hardier variety of this species from the Riviera (*Bambos tulda longispiculata*, No. 40936) is of unusual interest. No bamboo yet introduced has produced a quality of wood so suitable for split-bamboo fishing rods and talking-machine needles as the tulda, and there appears to be a strong demand for its culms.

The Para grass and Carib grass, both remarkable rank-growing foliage grasses from the Tropics, have grown successfully in southern Texas and in the Everglades and are yielding forage for cattle-raising purposes there; and the molasses grass (*Melinis minutiflora*, No. 41148), sent in by Mr. T. R. Day, of Macuco, Brazil, may succeed equally well and will at least be interesting to test in comparison with them.

Whether the elephant grass (*Saccharum ciliare*, No. 40989), which covers large areas in the Punjab, British India, and is frequently planted in lines or dividing hedges in low-lying places subject to periodic inundation, can be utilized in this country is a question worthy of investigation.

Mr. I. B. Pole Evans has sent in from British East Africa a grass (*Pennisetum longistylum*, No. 41055) which cattle eat greedily and which he reports to be one of the most promising in the country. Rhodes grass and Sudan grass have both been such distinctly profitable introductions from this general region that this new introduction will be watched with unusual interest.

Chinese names in this inventory have been brought, as far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the names of the smaller villages, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

This inventory has been prepared by Miss May Riley and the botanical determinations of seeds introduced made by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine under the supervision of Mr. S. C. Stuntz, in charge of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., April 9, 1917.

INVENTORY.

40896. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ. **Lemon grass.**

From Suva, Fiji Islands. Presented by Mr. C. H. Knowles, Superintendent of Agriculture, Nasinu Experiment Station. Plants received July 8, 1915.

"This grass, which furnishes the lemon-grass oil of commerce, is growing well on sloping ground, the soil of which is brownish red, not very good in quality. The ground was first ploughed and harrowed, and young plants from a seed bed set out at distances of 3 feet. The space between the young plants was kept clean by weeding, and the plants soon grew and covered the ground. Plants may be set out any time during wet weather, but from September to December is best. Under normal conditions the grass flowers about April or May, when about 4 feet high. After the grass has been cut it flowers irregularly during the year. The best time to cut appears to be when the grass is from 3 to 4 feet high, but before it is heavily in flower. Subsequent cuttings may be made whenever the grass is over 3 feet high. Two cuttings may be depended on, while three may be made unless dry weather sets in for some time. The young grass is richer in oil than the older grass, but the total yield per acre obtained in the same time is less." (Extract from *Bulletin No. 6, Fiji Department of Agriculture, Notes on a Lemon Grass from Fiji.* See this bulletin for further information.)

40897. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchcock. Poaceæ. **Sorghum.**

From Reduit, Mauritius. Presented by Mr. F. A. Stockdale, Director of Agriculture, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received July 6, 1915.

40898 to 40903.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 2, 1915. Quoted notes by Mr. Meyer.

40898. ULMUS PUMILA L. Ulmaceæ. **Elm.**

"(No. 2297a. Peking, China, May 14, 1915.) Seed of the common North China elm, which has proved itself to be adapted as an ornamental tree over a very extended territory in the United States. Introduced previously under S. P. I. No. 22975, which number see for further information."

40899. ZIZIPHUS JUJUBA Miller. Rhamnaceæ. **Jujube.**
(*Ziziphus sativa* Gaertn.)

"(No. 2298a. Peking, China, May 5, 1915.) Seeds of a small-fruited variety of cultivated jujube, containing a large percentage of seeds with plump kernels. To be raised primarily as stocks for improved varieties. Purchased in the Peking market."

40898 to 40903—Continued. (Quoted notes by Mr. F. N. Meyer.)

40900. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 2300a. Peking, China, May 19, 1915.) A small-seeded variety of peach, said to be grown in the Western Hills near Peking. To be tested as a stock and experimented with in localities north of the peach belt proper. May possibly be a very hardy sort. Purchased in the Peking market."

40901 and 40902. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. **Asparagus bean.**
(*Dolichos sesquipedalis* L.)

40901. "(No. 2301a. Peking, China, May 18, 1915.) A variety of yard-long bean, said to be unusually elongated; much used as a garden vegetable either fresh, dried, salted, or pickled. Needs support and a rich, yet light, soil to give maximum returns. Chinese name *Ch'ang ch'ing chiang tou* or *Shih pa tou*, meaning 'Long green yard bean' or 'Eighteen-in-a-pod bean.'"

40902. "(No. 2302a. Peking, China, May 18, 1915.) A variety of yard-long bean, said to be rather short and more prolific than the preceding number. [S. P. I. No. 40901.] Used in similar ways. Chinese name *Tuan ch'ing chiang tou*, meaning 'Short green yard bean.'"

40903. DOLICHOS LABLAB L. Fabaceæ. **Hyacinth bean.**

"(No. 2303a. Peking, China, May 10, 1915.) A brown-seeded variety of hyacinth bean, much used by the Chinese as a vegetable, preferably sliced green and only slightly cooked. These hyacinth beans are much grown as a home vegetable along fences of kaoliang stems and even in between maize. They are also quite decorative. Chinese name *Ch'ing pien tou*, meaning 'Green flat bean.'"

40904. RUBUS CANADENSIS L. Rosaceæ. **Blackberry.**

From West Virginia. Collected by Mr. A. B. Brooks, forester, West Virginia Agricultural Experiment Station, Morgantown. Received July 9, 1915.

"Collected on the northern end of Back Fork Mountain, in Randolph County, at an altitude of a little over 3,500 feet. I searched on Point Mountain where Dr. Millspaugh reports finding this species, but found none that seemed to me typical. I wish to state that my observations on this trip tend to strengthen what I have believed for some time, namely, that this species varies greatly as to some of its characters, due to conditions under which it grows. For example, I found to-day hundreds of acres overgrown with this blackberry, some of the plants growing in rich north exposures and in shady places, while others grow on open sunny flats and southern exposures and on poor ground. Invariably the plants growing in the rich soil and in the shade are found to be unarmed for the most part and very tall and thrifty, of course, while those in the sunny, poor soil are found to be stunted and with a rather good supply of prickles (these I have been calling *Rubus canadensis*). So when I go to look for *R. millspaughii* I am somewhat at a loss. The specimens sent grew in a shady place." (*Brooks.*)

Collected as *Rubus millspaughii*, now recognized as a synonym of *R. canadensis*.

40905. ALEURITES FORDII Hemsley. Euphorbiaceæ. **Tung tree.**

From Auburn, Ala. Presented by Mr. Ernest Walker, horticulturist, Alabama Agricultural Experiment Station. Received July 6, 1915.

Seed from the crop of 1914 produced by trees sent to the experiment station under S. P. I. No. 21013

40906 to 40909.

From Cuzco, Peru. Presented by Dr. A. A. Giesecke, president, University of Cuzco. Received July 8, 1915.

40906. LUCUMA sp. Sapotaceæ.

40907. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

40908. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

40909. PRUNUS DOMESTICA L. Amygdalaceæ. **Plum.**

40910. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Changchun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received July 8, 1915.

40911 to 40913.

From Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 16, 1915. Quoted notes by Mr. Popenoe.

40911. MANGIFERA INDICA L. Anacardiaceæ. **Luisa mango.**

"(Jovellanos, Matanzas Province, Cuba, July 11, 1915.) *Luisa* mango. A seedling of the Philippine race. The parent tree, from which this bud wood was taken, is growing in the garden at the Casa Vivienda, on the Nueva Luisa sugar estate. My attention was directed to it last year by Prof. F. S. Earle, who considers it the best Philippine variety which he has seen in Cuba. *Luisa* is a typical Philippine mango, long, slender, and pointed at the apex, varying somewhat in form and size. A good specimen will weigh 8 or 10 ounces. The color is lemon yellow, as in others of the type. The fruits are not yet ripe, so I have not had an opportunity to test the quality, but according to Prof. Earle it is excellent. The tree is not fruiting heavily this season, there being only a few clusters close to the ground and about a dozen close to the top of the tree. Seedlings of the Philippine race are frequently rather unproductive, although the fruits are produced in clusters of two or three to about ten, and in a good season an enormous crop may be produced. Because of its excellent flavor and quality, this variety should be given a trial at Miami, Fla., but it will be well to observe its fruiting habits for a few years before distributing it to any extent."

Cuttings.

40912. PERSEA AMERICANA Miller. Lauraceæ. **Luisa avocado.**
(*Persea gratissima* Gaertn. f.)

"(Jovellanos, Matanzas Province, Cuba, July 11, 1915.) *Luisa* avocado. The parent tree of this variety is growing in the garden at Casa Vivienda, on the Nueva Luisa sugar estate. It is a large seedling, apparently 25 years old at least. Its particular value lies in the fact that the fruit is said to ripen in October, after nearly all the other avocados are gone. The fruits, which are only about 3 inches long at present, are broadly obovate in form, with no indication of a neck, the skin light green when

40911 to 40913—Con. (Quoted notes by Mr. Wilson Popenoe.)

ripe and very thick. Judging from the immature fruit, the seed cavity is not large and the seed fits in it snugly. According to the gardener who was in charge of the place, the fruit is of excellent quality, with a rich flavor and no fiber. The tree, which stands among a lot of others beside a small stream which trickles through the garden, is bearing a good crop of fruit. The only late avocado at present grown commercially in southern Florida is the *Trapp*. It seems well worth while to try other varieties which ripen late in the season, and *Luisa* has been obtained with this in view. The season is earlier here than in Florida, generally speaking, and an avocado which ripens here in October may hang on the tree in Florida until even later than this, because of the cool autumn weather. To be given special attention, as it may be of considerable importance."

Cuttings.

40913. MORINGA OLEIFERA Lamarck. Moringaceæ.

"*Palo blanco.* A small ornamental tree which is planted in the gardens of this region. As commonly seen here, it is a tree of about 15 or 20 feet in height, erect, and of very attractive appearance. The leaves are pinnately compound, often nearly a foot in length, of pleasing light-green color, with opposite, shortly petiolulate obovate-elliptic leaflets rarely over half an inch long. The flowers are borne in axillary panicles 6 to 8 inches long; they are white, about an inch long, and faintly fragrant. As they are produced in great abundance, they make the tree effective as an ornamental. The slender triangular seed pods are often a foot in length; when ripe they dehisce and scatter the ground with seeds. *Palo blanco* is considered to be an antidote for manchineel poisoning. As an ornamental it seems worthy of trial in southern Florida, and possibly also in southern California, in regions protected from severe frosts."

40914. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received July 13, 1915.

"Collected in Natal, near Pietermaritzburg. In forwarding this grass seed to you, I think it only right that I should point out that this grass in South Africa is highly susceptible to the rust *Puccinia purpurea* Cooke, and also to a new smut which I am describing in a paper to be read at the meeting of the South African Association for the Advancement of Science, which meets in Pretoria next month, and have named it *Sorosporium simii* Pole Evans. In view of the importance of Sudan grass in America, I think it highly probable that this smut which occurs on *Sorghum halepensis* will also attack your Sudan grass." (*Evans.*)

40915. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College, through Mr. F. E. Shamel. Received July 19, 1915.

"*Haak-ip* (*Hei yeh*) litchi. The litchi seems to do best in about this latitude. It succeeds somewhat north and south of this, but I should say can not stand much frost. We have a light frost here almost every year, but not heavy enough to do much damage. The litchi seems to do best on dikes of low land

where its roots can always secure all the water needed and where they are even subject to submersion. In some places they grow it on high land, but not nearly so successfully. I have never seen a budded or grafted litchi tree, and I understand budding and grafting are never done. Litchi trees are either inarched or layered, layering being the most common and the most successful. If inarched, it is on litchi stock. The common practice in inarching is to use the *Loh mai chih* [*No mi chih*] variety for scions and *Shan chi* variety for stock. The seeds of the various varieties vary greatly in vitality. I am told that there is absolutely no success with seedlings, though seeds of certain varieties germinate quite readily. This variety, the *Haak-ip*, is one of the most popular and is now on the market. The seed of this variety germinates quite readily, though not so well as the *Shan chi*." (*Groff.*)

40916. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received July 19, 1915.

"These litchis are about one month later than the first lot I sent you [S. P. I. No. 40850]. They are of a more delicate texture and flavor, but the flesh is thin in proportion to the seed. The tree has a poor chance, however, and under proper conditions might do better." (*Higgins.*)

40917. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Alamoen.**

From Paramaribo, Dutch Guiana. Presented by Dr. J. A. Samuels, who secured it from Mr. A. J. Bueno de Mesquita. Received July 16, 1915.

"This fruit, which is most likely the largest variety of citrus, is called *Guidieon-apple* in Surinam, or *Alomoes*, the Dutch name being *Pompalmoes*. It is not cultivated on a large scale, but is planted in the house gardens both in the city and the country. No attempt has been made at selection work to improve the quality, and the fruit is not used for industrial purposes." (*Samuels.*)

See S. P. I. No. 37804 for previous introduction and description.

40918. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. **Tiger bean.**

From Changning, via Swatow, Kiangsi, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received July 7, 1915.

"Tiger beans, something new to me, but very good to eat. We like them baked and, indeed, any way. The only difficulty is to get enough of them, for they are not common." (*Bousfield.*)

40919. TRITICUM DICOCCUM Schrank. Poaceæ. **Emmer.**

From Bombay, India. Presented by Mr. Selby S. Coleman, American vice consul, who secured it from Mr. Frank Harrison, Bombay.

Wild *Kathiawar* wheat. Determined by Mr. M. A. Carleton as an emmer.

See S. P. I. No. 39227 for previous introduction and description.

40920 and 40921. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Cienfuegos, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cutting received July 19, 1915.

40920. "(Cienfuegos, Cuba, July 13, 1915.) *Manga mamey.* A fine seedling type, found only in the Quinta Aviles, so far as known. Its

40920 and 40921—Continued.

origin is uncertain, but its affinities seem to lie with the common *manga* group; hence the Cubans call it *manga mamey*. It is considered by many to be superior in flavor to *mango Chino*, but does not seem to be shipped to Havana in such quantities, possibly because there are fewer trees of this type in the Quinta. Like *Chino*, however, it is a true seedling type, polyembryonic, and apparently maintains the type characteristics when grown from seed. In general form it is broadly cordate, very short (just about as broad as long), slightly compressed laterally, the base flattened and very slightly oblique, the apex with a suggestion of a beak. In weight it averages 8 to 12 ounces. The stem is inserted in a shallow, narrow, almost regular cavity. The surface is smooth, greenish orange-yellow to orange-yellow in color, blushed around the base with reddish salmon. The dots are large and conspicuous, a distinguishing feature of the type, as frequently with other members of the *mango* group. The skin is thick and very tough, the flesh bright yellow-orange, meaty, moderately juicy, with very little aroma. The flavor is acid, pleasant, fairly spicy; fiber not very objectionable except around the ventral edge of seed, where it is long and fine. The seed is long, rather thick, with two to five embryos in the specimens examined, and an exceedingly hard, woody endocarp. In season this type agrees with *Chino*, being early to midseason in ripening. While somewhat more fibrous than the best Indian varieties grown in Florida, it is far above the average Cuban seedling in quality and freedom from fiber, and is here considered a very choice mango. The trees appear to be productive. For trial in southern Florida." (*Popenoe.*)

40921. "(Cienfuegos, Cuba, July 13, 1915.) *Mango Chino.* This is one of the largest and best seedling types in Cuba. As far as known it is found only in the Quinta Aviles, near Cienfuegos, where there are a number of old and large trees from which the Havana market, as well as local markets, are supplied. In Havana single fruits of this type bring 20 to 40 cents each. There appears to be very little difference among the fruits from the various trees of this type grown in the Quinta Aviles. As the trees are all seedlings, this constancy of the type characteristics proves that *Chino* is not merely a seedling variety, but a type which will doubtless reproduce its distinguishing characteristics when grown from seed. In general form *Chino* is broadly cordate, plump, usually somewhat oblique at the base and rounded at the apex. It weighs 10 to 16 ounces. The stem is inserted in a shallow, somewhat irregular, cavity. The surface is smooth, greenish yellow to dull cream yellow in color, overspread or blushed around the base with carmine. The skin is very thick and tough, making the fruit an excellent shipper. The flesh is deep yellow in color, orange-yellow toward the seed, of very firm and meaty texture, juicy, and with a very faint but pleasant aroma. The fiber is more abundant than in our best India varieties, but much less so than in the average Cuban seedling; it is long at the ventral edge of the seed, but comparatively short elsewhere. The flavor is rich, spicy, and very pleasant, the seed oval, rather thin and not objectionably large. It usually contains four to six embryos. *Chino* is rather early in season, and the trees seem to be productive. The origin of this type is not known; the man who planted the trees is now dead, and the caretaker

40920 and 40921—Continued.

at the Quinta, who has been there 35 years, says that the trees were nearly as large when he first came on the property as they are now. It is a very distinct type; nowhere have I seen one which seemed to be closely allied to it or resembled it in all details. It should be tried in southern Florida." (*Popenoe.*)

For an illustration of trees of these mangos, see Plate I.

40922 and 40923. Oryza sativa L. Poaceæ. **Rice.**

From Constantinople, Turkey. Presented by Mr. G. Bie Ravndal, American consul general, through the American consul general at Athens, Greece. Received July 10, 1915.

40922. No. 91. *Broussa* rice. 40923. No. 92. *Broussa* rice.

See S. P. I. No. 39545 for previous introduction and description.

40924. Celtis audibertiana Spach. Ulmaceæ. **Hackberry.**

From Paris, France. Presented by the director, Museum of Natural History. Received July 12, 1915.

The form of *Celtis occidentalis* cultivated in the gardens of the Paris Museum of Natural History. Leaves somewhat glaucous, scarcely shiny. Fruit-bearing pedicels two to three times as long as the petioles. Stones slightly larger than those of *C. occidentalis* of the more typical form.

40925. Phaseolus lunatus L. Fabaceæ. **Cape bean.**

From Marseille, France. Presented by Dr. E. Heckel, director, Colonial Museum of Marseille. Received July 14, 1915.

"*Phaseolus lunatus, kalamaka* of the Malagasies. Cape beans have taken the second place among the agricultural products of Madagascar in exportation. In commerce, this large bean bears different names, *haricot d'Orleans, haricot de Lima, de Paragué*, etc. It has been known in Madagascar for a very long time, and it is mentioned in the accounts of voyages before the seventeenth century. Its culture is practiced almost exclusively in the Provinces of Tulear and Morondava, situated at the southwest of the island. The alluvial soils of the deltas of this region suit it admirably, particularly those which are rich in micaceous elements. These are ordinarily recovered from bararatas, large reeds (*Phragmites communis?*), attaining 4 meters in height and submerged during the winter. The soil is prepared by superficial working. This preparation commences in March and April, as soon as the waters subside. The bararatas (reeds) are cut and burned; they shoot again, but the young shoots are broken down with a stick and this encroaching vegetation disappears. The seeds are planted in holes from 3 to 4 meters apart, in March and April. Harvest takes place from September to December. Almost all of the crops of cape beans are irrigated. Sells in Marseille for 65 francs per 100 kilos." (*Heckel.*)

40926. Canarium ovatum Engler. Balsameaceæ. **Pili nut.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received July 19, 1915.

"Because of the easy digestibility of these nuts, they are being used in increasing quantities for the preparation of an infant food, the excess of oil being removed and the nuts ground to a paste.

"These nuts have been gathered by one of our representatives residing on the island of Catanduanes and are fresh stock, hulled by the cold-water process. Mr. Jacobson stated that the shipment consists of at least two distinct types, and it is the short, well-rounded type that we have been able to germinate in our grounds in Luzon." (*Adn. Hernandez.*)

40927. ALEURITES MOLUCCANA (L.) Willd. Euphorbiaceæ. **Lumbang.**
(*Aleurites triloba* Forst.)

From Littleriver, Fla. Procured from Mr. Charles A. Mosier. Received July 19, 1915.

40928 to 40935. ORYZA SATIVA L. Poaceæ. **Rice.**

From Tananarivo, Madagascar. Presented by the Governor General of Madagascar. Received July 14, 1915.

40928.	No. 1.—A.	*Lava.*	**40932.**	No. 3.—A.	*Madinika.*
40929.	No. 1.—B.	*Lava.*	**40933.**	No. 3.—B.	*Madinika.*
40930.	No. 2.—A.	*Lava somotra.*	**40934.**	No. 4.—A.	*Vato.*
40931.	No. 2.—B.	*Lava somotra.*	**40935.**	No. 4.—B.	*Vato.*

40936. BAMBOS TULDA LONGISPICULATA (Gamb. and Brand.) Bois and Grignan. Poaceæ. **Bamboo.**

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Plants received July 21, 1915.

"M. Rivière, who was here about a year ago and saw my plant, appeared to doubt that my specimen was exactly the same species as described by him under the name *Bambos macroculmis* (not from flowers, which he never saw). But I have the impression that his doubt depended mainly on the difference in size, his *B. macroculmis* acquiring up to 25 meters in height, while my plant has not until now produced shoots more than 15 to 18 meters in height. Still this seems of little importance, as my plant is in a rather poor condition, crowded all around by trees, palms, etc., and poorly exposed in poor soil, and there can be no doubt that under good conditions my plant would make a much better growth. Anyhow, my plant corresponds exactly to description of *B. macroculmis*. It has flowered for three consecutive years on one or two of the smallest shoots, but it is growing on just as usual, and evidently belongs to the bamboos which do not die after flowering. The stalks are comparatively compact, with less cavity than the ordinary Japanese and Chinese species so common in gardens, and very strong and lasting, which I can testify, having used them for prolongation of a very long and heavy ladder. This large bamboo is hardy in my badly exposed garden and therefore would be so generally on the Riviera. The new shoots start in autumn and generally do not finish development before spring, but when frost arrives they do not suffer; growth is simply arrested for some time. Of course it is possible that in low, water-logged ground and with lasting frosts the young shoots might be killed, but in my garden on a steep hill this has not happened. Unfortunately, no seed has been produced, but this species can be multiplied by slips of the crowded side branches which yearly start anew and form aerial rhizomes. If I should divide the clump, it would be a question of an enormous bulk, which, even when cutting away the stalks (which, according to my experience here when transplanting, can not be safely done, such clumps without leafage dying), would weigh nearly a hundred

SEEDLING MANGOS OF THE TWO PRINCIPAL CUBAN RACES, AT SANTIAGO DE LAS VEGAS. (SEE S. P. I. NOS. 40920 AND 40921.)

The tall tree on the left is typical of the race called *mango*, while the low, broad one is a *manga*. This classification, although one made by the natives, seems to hold in both tree and fruit characters, the *mango* type of fruit being nearly always elongated or longer than broad, frequently more or less reniform, and usually beaked. The fiber is long and coarse, but not very thick, and the pulp is slightly more acid than that of the *manga*. The *manga* type produced by the low broad trees has fruit nearly always broader than long, usually oblique at base and apex, with no beak. The fiber is fine and extremely abundant, almost impossible to separate from the very sweet pulp. (Photographed by Wilson Popenoe, Santiago de las Vegas, February 23, 1916; P16677FS.)

THE NARIZ TREE, ANACARDIUM EXCELSUM (BERT. AND BALB.) SKEELS, A RELATIVE OF THE CASHEW, AT TRINIDAD, CUBA. (SEE S. P. I. NO. 40987.)

A magnificent South American tree, attaining a height of 65 feet, with an erect compact head of dark-green foliage. The fruits, which ripen in August, are dark brown, about an inch long, reniform and flattened, and shaped somewhat like a nose, whence the name *nariz*. The fruit stalk is not large and swollen, nor are the seeds considered edible, as in the cashew. The tree is worthy of trial as an ornamental, although the fruit appears to have no value. (Photographed by Wilson Popenoe, July 17, 1915; P16417FS.)

kilos. I think from what I have personally seen for years that the climate of southern California may be a little colder than that of the Riviera, since so many plants suffer in southern California which do not suffer here, and my California correspondents confirm my earlier personal experience. Still I think that the bamboo in question will grow, at least in all the sheltered parts of southern California, and undoubtedly in places such as Santa Barbara and San Diego, where, as my correspondents write me, the same species resist as here on the Riviera." (*Proschowsky.*)

40937. MELILOTUS ALBA Desr. Fabaceæ. **Melilot.**

From Changchun, Manchuria. Presented by Dr. R. J. Gordon, Irish Presbyterian Mission. Received July 8, 1915.

40938 to 40969. TRITICUM spp. Poaceæ. **Wheat.**

From Lyallpur, Punjab, India. Presented by the Department of Agriculture. Received July 15, 1915.

Quoted notes from Albert and Gabrielle L. C. Howard, Memoirs of the Department of Agriculture in India, vol. 2, no. 7. (The abbreviation D. means density of ear.)

40938 to 40940. TRITICUM DURUM Desf. **Durum wheat.**

40938. "Type No. 1. Var. *melanopus* Al. Awns long, black, but the black colour is lost very easily; chaff densely felted, white with a pinkish tinge, often spotted with mould fungi; grains long, amber, generally hard and flinty, although occasionally mottled ones are found; density varies with the rankness of growth; straw tall, slender but stiff; somewhat liable to rust; ripens late. This is the common macaroni wheat of the Punjab and was found in the Wadanak of Zira, Wadanak of Sialkot, Wadanak of Batala, Wadanak Kalchingari of Montgomery, Wadanak of Amritsar, Dagar of Pind Dadan Khan, Dagar of Wazirabad, Dagar of Shahpur, Pamman of Ferozepore, Dagar of Muzaffargarh, Dagar of Multan, Dagar of Montgomery, in the Wadanaks of Lyallpur, Ferozepore, and Amritsar, and the Palestine of Lahore."

40939. "Type No. 2. Var. *africanum* Kcke. Similar in most respects to type 1, but the ears taper to a point and are slightly longer; grain very dark red, hard on the whole, with a very few mottled grains; length of ear 84 mm.; D. [density of the ear] = 28. This type is more liable to rust than type 1. This type was only met with as an impurity in Wadanak Kalchingari of Montgomery."

40940. "Type No. 3. Var. *leucurum* Al. Awns long, white with a reddish tinge; chaff smooth, shiny, white with a pinkish tinge due to the veins on the glumes being red; grain very long and thin, white, much lighter in colour than type 1, generally very hard and translucent, hardly a mottled grain to be found; length of ear, 75 mm.; D. = 22; straw good; ripens late; not so liable to rust as type 1. This type was only found as an impurity in the Wadanak of Lyallpur in very small quantity. The grains of this wheat are so long that in cleaning prior to grinding they would pass over standard sieves with the large impurities."

40938 to 40969—Con. (Quoted notes by A and G. L. C. Howard.)

40941 to 40969. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

"*T. compactum* Host. Dwarf wheats. Ears exceedingly dense and short, rarely over 5 cms. long, outer glumes keeled in the upper half and rounded in the lower half, straw very short and stiff, grains rounded.

"There are four varieties of dwarf wheats grown in the Punjab. These wheats are drought resisting and are generally grown on inundation moisture with little rain. They are also said to be good yielders and type 7 has a good reputation for bread making. Owing to the smallness of their grain they can, however, be used only for indigenous consumption and they are therefore being gradually replaced by common wheats. They agree with the common wheats in time of ripening and showed themselves exceedingly susceptible to early rust, *Puccinia triticina* Eriks., when grown at Pusa; in fact, they were almost destroyed by it. They are, however, fairly resistant to yellow rust. The ears are short and erect, the straw stiff, short (generally about 3 feet 6 inches or 4 feet), hollow throughout, as in common wheats, but much stouter.

"Humphries remarks that 'types 4 and 7 are extraordinarily small in the berry, so small that millers would hesitate to buy them if they contained any small seeds, because the machinery used for extracting the small seeds would take out simultaneously a very large proportion of the wheat berries themselves.'"

40941. *T. compactum.* "Type No. 4. Var. *erinaceum* Kcke. Ears bearded, with short bristly spreading awns very irregular in length, awns red; chaff smooth and dark red; grain very small, round, rather a light dirty red in colour, very difficult to distinguish from a dark amber, hard on the whole, with a few soft grains; ear length 50 mm.; D.=38; straw shows no pink colour. To this type belongs the Makkhi of Chiniot."

40942. *T. compactum.* "Type No. 5. Var. *linaza* Kcke. Ears beardless; chaff felted with short hairs, white with a pinkish tinge due to the pink colour of the edges and the veins of the glumes; grain round, small, but larger than in type 4, amber coloured, hard on the whole, with a few soft and mottled grains; ear length 49 mm.; D.=38; straw pinkish, turning black or greyish pink on ripening. This type was only met with in small quantity in the Makkawali of Dera Ghazi Khan."

40943. *T. compactum.* "Type No. 6. Var. *wernerianum* Kcke. Ears beardless, but with occasional very slight bearding; chaff smooth, white with a pinkish tinge; grain round, about the same size as in type 5, a clean light red, all soft; ear length 44 mm.; D.=39; straw has no pink colour. This type was only found in small quantity in the Makini of Multan."

40944. *T. compactum.* "Type No. 7. Var. *humboldti* Kcke. Ears beardless; chaff smooth, white with a pinkish tinge; grain round, about the same size as in type 5, but possibly a little smaller, amber coloured, consistency very variable, hard, soft, and mottled grains found in about equal proportions; ear length 45 mm.; D.=41; straw pinkish, turning black on ripening. This is the

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

common dwarf wheat of the Punjab, and was found in the Rodi of Shahpur, Rangrih or Ghiali of Kangra, Makini of Multan, Daudi of Muzaffargarh, Daudan of Multan, Makkawali of Dera Ghazi Khan, and in Daudi of Multan. Mr. A. C. Dobbs, of Lyallpur, found that this wheat was grown at Rawalpindi and that it was considered in that district as the best for bread making."

40945. "Type No. 8. Var. *barbarossa* Al. Ears bearded; awns red; chaff felted with short, rather sparse hairs, yellowish red; grain dark red, consistency variable, hard, soft, and mottled grains found in about equal proportions; ear length 78 mm.; D.= 24; straw good; ears erect and rather slender. This type was found in the Lal Kasar-wali of Lyallpur in very small quantity."

40946. Type No. 8 A. **40947.** Type No. 8 B.

40948. "Type No. 9. Var. *fuliginosum* Al. Ears bearded; awns stiff, stout, rather short, black but lose their colour very easily; glumes sharply keeled to the base; chaff densely felted with long hairs, the felting resembling very closely that found on the macaronis, chaff greyish white or yellowish white, pink at the edges, generally with black spots of Cladosporium; grain very dark red, on the whole hard with a few mottled grains, the shape resembling that of a common wheat; ear quadratic in section, somewhat club shaped at the top, somewhat compact; ear length variable, about 70 mm. on the average; D.= 25; straw stiff, stout, hollow throughout; ears very erect. This type was found in the Lal of Batala, Ratti of Montgomery and in the Lal Kale Kasar-wali of Lyallpur; it was also found in small quantity in the Lal Desi of Jhelum, Lal of Delhi, Pamman of Ferozepore, Dagar of Multan, Kunjhari of Muzaffargarh. This wheat is one of the most interesting types found in the Punjab, for although it must be classed as a common wheat, it appears to possess many of the characters of the macaroni wheats. The felting resembles very closely that of the macaroni wheats and is quite different to that found on the other felted common wheats or on the felted dwarf wheat. The shape of the glumes with the keeling continued sharply to the base resembles that of macaroni wheats. The hollow straw and the shape of the grain are, however, those of a common wheat. The shape of the ear with its compact sometimes club-shaped top, the stoutness of the straw, and the stiff awns remind one of the dwarf wheats, and it seems quite possible that this wheat, which is unique in India, may have arisen from a natural cross between a dwarf and macaroni wheat. This supposition is supported by the fact that we have found a dwarf wheat to be the female parent in some of the natural crosses found by us and described in the last part of this paper. At flowering time this wheat (type 9) appears to shed a vast amount of pollen and probably gives rise in this way to further natural crosses. It is interesting to note that this wheat is marked by Humphries as being the best of the 25 Punjab types submitted to him."

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

40949. Type No. 9 A.

40950. "Type No. 10. Var. *erythroleucon* Kcke. Ears bearded; awns red; chaff smooth, dull light red; grain amber coloured, liable to sprout in the ear, consistency variable, hard, soft, and mottled grains found in equal proportions; length of ear 82 mm.; D.= 21; straw short and weak, ears bend over when ripe; early. This type was found in the Safed of Moga, Mundi of Ludhiana, Jogia of Karnal."

40951. "Type No. 11. Var. *erythroleucon* Kcke. Ears bearded; awns red; chaff smooth, a more intense and brighter red than in type 10; grain amber coloured, liable to sprout in the ear, consistency variable, but with a majority of soft grains; ears squarer and denser than in type 10, ear length 76 mm.; D.= 25; straw tall and strong, ears stand erect; later than type 10. This type was found in the Safed of Amritsar, Sohan of Chiniot, Kunjhari of Dera Ghazi Khan, Daudi of Lyallpur, and in the Jogia of Karnal."

40952. "Type No. 12. Var. *erythroleucon* Kcke. Ears bearded; awns red with occasional blackening; chaff smooth, dull light red with a somewhat bluish tone, occasional blackening on the chaff; grain amber coloured, hard on the whole; ear length 86 mm.; D.= 21; straw intermediate in strength between that of types 10 and 11, pink, turning black on ripening, tall; ears bend over when ripe; early; grain easily shed. This type was found in the Rangrih of Palampur."

40953. "Type No. 13. Var. *ferrugineum* Al. Ears bearded; awns red; chaff smooth, shiny, yellowish or brownish red; grain red, intermediate in colour between the dark and light red-grained types, rather small, consistency variable, about two-thirds being hard; ear length 96 mm.; D.= 18; straw medium; ears fairly erect; rather late. This type was found in the Lal Kasar-wali of Lyallpur. The hard red of Gujar Khan also belongs to this type, but ripened a little later than the Lal Kasar-wali. This difference may easily disappear after the hard red of Gujar Khan is acclimatised at Lyallpur."

40954. "Type No. 14. Var. *erythrospermum* Kcke. Ears bearded; awns pinkish yellow; chaff smooth, white with a reddish tinge when ripe; grain light red, hard and soft grains in about equal proportions; ear length 80 mm.; D.= 23; straw weak and short; ears bend over when ripe; early; fairly rust resistant; sheds its grain more easily than type 15. This type was found in the Lal of Karnal, Lal of Sialkot, Lal of Attock, Lal Safed of Sirsa, Lal of Zira, Kasalu or Surkh of Ferozepore, Ratti or Lal of Pind Dadan Khan, Lal of Ludhiana, Desi Surkh of Jullunder, Lal Desi of Jhelum, Lal of Rawalpindi, Lal of Delhi, Kunjhari of Muzaffargarh."

40955. "Type No. 15. Var. *erythrospermum* Kcke. Ears bearded; awns pinkish yellow; chaff smooth, white with a reddish tinge when ripe; grain light red, consistency variable, but the majority are soft grains; ear length 80 mm.; D.= 25; straw tall and strong; ears erect when ripe; late; susceptible to rust; grains less easily

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shed than in type 14. This type was found in the Ratti or Lal of Pind Dadan Khan, Watni of Shahpur, Kunjhari of Multan.

"Types 14 and 15 form the common red wheat of the Punjab. A glance at the names of the varieties will show that they are cultivated all over the province. They are very similar to, if not identical with, the common red wheats cultivated in the United Provinces. These two types are absolutely identical in the laboratory, but quite different in the field."

40956. "Type No. 16. Var. *graecum* Kcke. Ears bearded; awns rather pinkish yellow; chaff smooth, white with pink edges and veins; grain white, rather small, on the whole soft, but with some hard and mottled grains; ear length 78 mm.; D.= 23; straw fairly strong. This type was found in the Ghoni of Lahore, Safed of Ludhiana, Safed of Rohtak, Safed of Batala, Daudkhani of Dasuya, Daudkhani of Delhi, Pori of Montgomery, and in the Safed Kasar-wali of Lyallpur."

40957. "Type No. 17. Var. *delfii* Kcke. Ears beardless; chaff felted with short, rather sparse hairs, red with a bluish tinge; grain amber coloured, consistency variable; hard, soft, and mottled grains present in equal proportions; ear length 94 mm.; D.= 19; straw medium. This type was found in the Rodi of Attock, Ghoni of Gujrat, Ghoni of Sialkot, Khoni of Jhelum, Ghoni of Chiniot, Ghoni of Amritsar, Khoni of Batala, Mundli of Karnal, Mundli of Ludhiana, Safed of Lahore, Kanku of Palampur, Jhakrehun of Palampur, Safed Brij Sondha of Rohtak, and in small quantity in the Rodi of Muzaffargarh, Ghoni Lal, Ratti of Muzaffargarh, Desi of Dera Ghazi Khan, Suthra of Multan. This is a very common wheat in the Punjab."

40958. Type No. 17 B.

40959. "Type No. 18. Var. *delfii* Kcke. Ears beardless; chaff felted with short, rather sparse hairs, yellowish red; grain amber coloured, consistency variable, but the majority of the grains are soft; ear length 72 mm.; D.= 26; ears squarer and denser than in type 17; straw stronger than in type 17; later in ripening. This type was found in the Rodi of Muzaffargarh, Ghoni Lal, Ratti of Muzaffargarh, Desi of Dera Ghazi Khan, Suthra of Multan, and in small quantity in the Ghoni of Chiniot, Ghoni of Amritsar, Jhakrehun of Palampur."

40960. "Type No. 19. Var. *leucospermum* Kcke. Ears beardless, but occasional slight bearding met with; chaff felted with some short somewhat sparse hairs, white with pink veins or edges to the glumes; grain whiter than in 17, 18, and 21, but darker than 16; consistency variable, but about three-quarters of the grains soft; ear length 74 mm.; D.= 24; straw strong, pinkish, turning black on ripening. This type was found only in very small quantity in the Buggi of Leiah at Lyallpur."

40961. Type No. 19 D. **40962.** Type No. 19 H.

40963. "Type No. 20. Var. *alborubrum* Kcke. Ears beardless, with occasional very slight bearding; chaff smooth; light yellowish red; grain amber coloured, rather large, consistency variable, but about two-thirds of the grains soft; ear length 78 mm.; D.= 24;

40938 to 40969—Con. (Quoted notes by A. and G. L. C. Howard.)

straw taller and stronger, ears more erect and later in ripening than type 21; grain very easily shed. This type was only found in the Ghoni of Amritsar."

40964. "Type No. 21. Var. *alborubrum* Kcke. Ears beardless, with occasional very slight bearding; chaff smooth, brownish red, dull; grain amber coloured, but somewhat whiter than 17, 18, and 20, consistency variable, about an equal amount of hard, soft, and mottled grains; ear length 90 mm.; D.= 20; straw medium; ears bend over when ripe; earlier than type 20; grain very easily shed. This type was found in the Kanku of Palampur and in small quantity in the Rodi of Attock, Ghoni of Gujrat, Ghoni of Sialkot, Khoni of Jhelum, Khoni of Batala, Mundli of Karnal, Mundli of Jullunder, Mundli of Ludhiana, Jhakrehun of Palampur, Ratti of Muzaffargarh, Kunjhari of Muzaffargarh, Kunjhari of Multan, Safed Ghoni, and Ghoni Lal."

40965. "Type No. 22. Var. *milturum* Al. Ears beardless, sometimes slightly bearded; chaff smooth, shining, dark brownish red; grain very dark red, consistency variable, but on the whole the sample is hard; ear length 94 mm.; D.= 19; straw medium, but rather better than in type 23. This type was found in small quantity in the Ghoni of Sialkot and in Safed Ghoni."

40966. "Type No. 23. Var. *milturum* Al. Ears beardless; chaff smooth, dull, yellowish red; grain very light red, somewhat small, entirely soft; ear length 81 mm.; D.= 23; straw medium. This type was only found in the Ratti of Muzaffargarh."

40967. Type No. 23. Var. *milturum* Al.

40968. "Type No. 24. Var. *albidum* Al. Ears beardless; spikelets blunt; outer glumes short and rounded, chaff smooth, white with a reddish border; grain yellowish white, resembles 19, rather large, consistency variable, but on the whole the sample is soft; ear length 93 mm.; D.= 20; straw strong; ears bend over slightly. This type was found in the Koni of Chakwal, Kunj of Muzaffargarh, Buggi of Leiah, and Safed Ghoni."

40969. "Type No. 25. Var. *albidum* Al. Ears beardless, often slightly bearded; spikelets pointed, outer glumes long and pointed; chaff smooth, yellowish white, shiny, with very slight reddish border; grain larger than in any other of the types of common wheat in the Punjab, greyish white of a different tone of colour to any of the other white wheats; on the whole soft; ear length 100 mm.; D.= 20; straw very strong; ears erect. This type was found in Buggi of Leiah and Safed Ghoni. These two types, 24 and 25, differ in appearance so much from all the other wheats of the Punjab and bear such a strong resemblance to the Australian wheats introduced into the province that we can not help suspecting that they originally came from Australia."

40970. PHASEOLUS MUNGO L. Fabaceæ. **Urd.**

From Trinidad, British West Indies. Presented by Mr. W. G. Freeman, Assistant Director of Agriculture and Government Botanist, Department of Agriculture. Received July 13, 1915.

"*Woolly pyrol.* I believe this is going to be a valuable green-manure crop in southern Florida." (*C. V. Piper.*)

40971 and 40972.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received July 15, 1915.

40971. ARDISIA CAPOLLINA A. DC. Myrsinaceæ.

A handsome shrub, related to *A. crenulata*, but distinguished by its entire, lanceolate leaves and wine-colored drupes. Flowers rose colored, in terminal panicles or clusters of umbels.

40972. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.

Shrub about 3 feet high, with few spreading branches, thin oblong leaves bunched on the small branchlets, and white flowers somewhat smaller than those of *A. incana*.

40973 and 40974. LITCHI CHINENSIS Sonnerat. Sapindaceæ. (*Nephelium litchi* Cambess.) **Litchi.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received July 24, 1915.

40973. "(No. 2304a. Shanghai, China. June 12, 1915.) About 20 pounds of seed, obtained from 250 pounds of fresh litchis, bought in the open market at 8 cents (Mexican silver) per pound. Said to have come from Canton. Of use as stocks for improved varieties and for selection work." (*Meyer.*)

40974. "(No. 2305a. Shanghai, China. June 19, 1915.) Fresh litchis, bought in the open market at 8 cents (Mexican silver) per pound. Said to have come from Canton. Of use as a stock for improved varieties and for selection work." (*Meyer.*)

40975 and 40976.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received July 21, 1915.

40975. ACACIA ARMATA R. Brown. Mimosaceæ.

"An evergreen bush, 4 to 6 meters in height, very dense. For the very driest poor soil." (*Proschowsky.*)

40976. MIMOSA ACULEATICARPA Ortega. Mimosaceæ.
(*Mimosa acanthocarpa* Poir.)

"One and one-half to 2 meters in height, covered all over with hooks and spines, forming impenetrable hedge. For the very driest poor soils." (*Proschowsky.*)

40977. ALEURITES MOLUCCANA (L.) Willd. Euphordiaceæ. (*Aleurites triloba* Forst.) **Lumbang.**

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received June 2, 1915.

"A handsome tree with spreading branches, alternate, lobed, pubescent leaves of a pale color, rounded or cordate at the base, with two glands at the top of the petiole. Flowers small, white, in terminal lax cymes; fruit fleshy, coriaceous, globose, with four shallow furrows; seeds one or two, rugose, gibbous. The *candlenut* tree is widely spread over Polynesia, a small part of Malaysia, and the Philippine Islands. It is remarkable that it has not established itself in Guam. Only a few specimens grow on the island, which are called either by the Philippine name *lumbang* or the Caroline Island name *ragaar*. The natives

say the nuts were brought here from the Caroline Islands. They have not come into use in Guam. Throughout Polynesia the nuts, strung on coconut-leaflet ribs, serve the natives for candles to light their houses. In Hawaii they are roasted, chopped up, mixed with seaweed, and served at native feasts as a relish. They yield an oil which is very fluid, of an amber color, without smell, insoluble in alcohol, readily saponifiable, and quick drying. This oil is a mild cathartic, acting in the same manner as castor oil, but causing no nausea or griping and having the further advantage of a nutty flavor and of being more prompt in its effects." (*Safford, Useful Plants of Guam.*)

40978 to 40983.

From Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Cuttings received July 26, 1915. Quoted notes by Mr. Popenoe.

40978 to 40982. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.** (*Persea gratissima* Gaertn. f.)

40978. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Bartlett* avocado. A rather remarkable variety growing in the garden of Dr. Alberto Bartlett, of this town. It is said to bear two crops a year; the first crop is early and is now ripening; the second crop commences in December and the last fruit was eaten this year on May 8. In form this fruit is broadly pyriform, and in size about 4 inches long by 3 inches in thickness. The color is bright green, the surface smooth. The skin is rather thin, scarcely over 1 mm. in thickness. The flesh is creamy yellow near the seed, changing to pale green near the skin, of good texture and said to be of good quality, though not excellent. The seed is about the average size, but not objectionably large; the seed coats are rather thick and loose, but I found no specimens in which the seed rattled in the cavity. The tree is evidently very productive, judging by the present crop. It is growing in a very favorable situation, however, and received a good deal of fertilizer. The fruit is attractive in appearance and seems well worthy of a trial in southern Florida."

40979. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Don Carlos* avocado. A small variety, said to be of exceptionally choice quality, from the Quinta Aguas Azules of Dona Serafina Wilson, Viuda de Bartlett, near Guadalupe, about 15 miles from Placetas. This fruit is almost perfectly round in form and of light yellowish green color. The skin is thick, the flesh of fine, oily texture, and the seed very small in comparison to the size of the fruit. The tree is bearing an excellent crop and can probably be considered productive. It ripens its fruit from August to October, and is not, therefore, a very late variety, but because of its good quality it is considered worthy of a trial in southern Florida. It was the favorite fruit of Don Carlos Bartlett, the former owner of the Quinta Aguas Azules, and has been named for him."

40980. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Guadalupe* avocado. A late variety from the quinta of Sr. Joaquin Wilson at Guadalupe, about 15 miles from Placetas. This is a broadly pyriform fruit, narrowed at the base, but not noticeably 'necked,' and somewhat oblique at the apex. It will probably weigh 12 to 14 ounces when ripe. The color is green, sometimes

40978 to 40983—Con. (Quoted notes by Mr. Wilson Popenoe.)

mottled with maroon; the skin is rather thin, about 1 mm. in thickness. The flesh, which seems to be entirely free from fiber, is said to be of very good flavor. The seed is of about the average size, not objectionably large, and apparently tight in the cavity. This tree produces the latest fruits of any on the Wilson farm, but the crop does not all ripen late, and only a few fruits hang on until February. At the present time there are fruits in various stages of growth upon the trees, some almost fully grown, others still quite small. Sr. Joaquin Wilson claims that he has picked ripe fruit from this tree during a large portion of the year. It does not appear to be a very heavy bearer, however. For trial in southern Florida."

40981. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Merced* avocado. The latest variety growing in the Quinta Aguas Azules of Dona Serafina Wilson, Viuda de Bartlett, near Guadalupe, about 15 miles from Placetas. The fruit is said to remain on the tree until February. It is broadly pyriform, very similar to *Pollock* in shape, but probably not over 1 pound in weight, judging by its present size. The color when ripe is said to be green and the quality excellent. The tree is old and in poor condition; it is not bearing a good crop this season, but might fruit more heavily under favorable conditions. For trial in southern Florida."

40982. "(Placetas, Santa Clara Province, Cuba, July 20, 1915.) *Wilson* avocado. A late variety, said to be of unusually good quality, from the quinta of Sr. Joaquin Wilson at Guadalupe, about 15 miles from Placetas. This is a rather small fruit, probably not over 8 or 10 ounces in weight, round to very broadly oval in form, usually somewhat oblique at the apical end. The color when ripe is said to be very light green. The skin is 2 mm. in thickness. The flesh is perfectly free from fiber and said to be of unusually fine texture and rich flavor. The seed is very small in proportion to the size of the fruit. According to Sr. Joaquin Wilson, after whom the variety is named, it ripens about Christmas. The tree is carrying an excellent crop and seems to be all that could be desired in regard to productiveness. While rather small in size, this seems to be a valuable fruit, and should be tried in southern Florida."

40983. MANGIFERA INDICA L. Anacardiaceæ. Mango.

"(Santiago de Cuba, July 23, 1915.) *Biscochuelo* mango. This is probably the best type of mango grown in the vicinity of Santiago de Cuba, and excepting the *Filipino* one of the very best in the island. It is quite common here and very abundant on the markets, where the fruits are sold at $2 per hundred. *Biscochuelo* is a fruit of rather unique form differing from all others I have seen in Cuba. It is oval to subreniform, decidedly oblique, the left shoulder rounded to very broad and marked by a deep suture, which extends some distance down the ventral side of the fruit, the right shoulder usually falling abruptly. The apex is rather sharp and sometimes almost beaked. In cross section the fruit is broadly oval. The weight is 8 to 14 ounces. The general color, when the fruit is fully ripe, is clear light orange, but as seen in the market they are frequently tinged with green. The skin is thick and tough, the flesh bright orange-yellow, firm and meaty, with a faint but pleasant aroma and very

40978 to 40983—Con. (Quoted notes by Mr. Wilson Popenoe.)

little fiber for a seedling type. The flavor is sweet even when the fruit is still quite hard, and when fully ripe it is very pleasant. The seed is reniform in outline, with long fiber on the ventral edge and short stiff fibers elsewhere, the embryos being one to five in number. Most of the specimens examined were polyembryonic. Seems worthy of trial in southern Florida."

40984 to 40986.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Cuttings received July 29, 1915.

40984 and 40985. FICUS SYCOMORUS L. Moraceæ. **Pharaoh's fig.**

40984. "*Baladi.*" 40985. "*Kelabi.*"

See S. P. I. No. 39858 for previous introduction.

40986. TAMARIX APHYLLA (L.) Karsten. Tamaricaceæ. **Tamarisk.** (*Tamarix articulata* Vahl.)

See S. P. I. No. 39856 for previous introduction and description.

40987 and 40988.

From Trinidad, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received July 21, 1915.

40987. ANACARDIUM EXCELSUM (Bert. and Balb.) Skeels. Anacardiaceæ. (*Anacardium rhinocarpus* DC.) **Nariz.**

"(Trinidad, Santa Clara Province, Cuba, July 17, 1915.) *Nariz.* A magnificent tree, native of South America. It is very rare here in Cuba, but there are four or five fine old specimens beside the cart road from Casilda to Trinidad, and it is from these specimens (which have been noted by Roig and de la Maza, Flora de Cuba, p. 131) that this specimen of seed was obtained. The *nariz* attains 60 or 65 feet in height, forming an erect but rather broad, compact head of dark-green foliage. As a shade and ornamental tree it should have considerable value. The leaves are entire, or nearly so, upon stout petioles one-half to 1 inch long, the blades obovate, oblanceolate, or spatulate, 6 to 18 inches long, 2½ to 6 inches broad, the apex obtuse to subacute, the base cuneate-attenuate, the surface smooth and deep green above, somewhat paler beneath, the venation raised below. The fruits ripen principally in August; they are dark brown, about an inch long, reniform and flattened, shaped somewhat like a nose, whence the name *nariz*. Unlike the cashew, the fruit stalk is not large and swollen, but is inconspicuous. The seeds are not considered edible. While this tree appears to have no particular economic value, it is worthy of trial as an ornamental, and it would also be of interest to test it as a stock for its relative, the mango." (*Popenoe.*)

For an illustration of the nariz tree, see Plate II.

40988. CORDIA ALBA (Jacq.) Roem. and Schult. Boraginaceæ.

"(Trinidad, Santa Clara Province, Cuba, July 17, 1915.) *Ateje.* A large shrub, 15 to 18 feet high, common along the eastern edge of the Valley of San Luis. It is bushy, branching close to the ground and sending up long, stiff shoots well furnished with dark-green foliage. The leaves are alternate, obovate to ovate-elliptical, 3 to 4 inches long, with entire margin and the surface covered with short, bristly hairs; petioles about an inch long, terete. The flowers, which are pale yellow and about

40987 and 40988—Continued.

half an inch in diameter, are borne in broad, flat-topped corymbs sometimes a foot across. The oblong-obovate fruits are half an inch in length and pearly white when ripe, inclosing a single large seed. It is apparently a good melliferous plant and of considerable ornamental value. For trial in southern Florida and southern California." (*Popenoe.*)

40989. Saccharum ciliare Anderss. Poaceæ. **Elephant grass.**

From St. Kitts, British West Indies. Presented by Mr. F. R. Shepherd, curator, Botanic Station. Received July 22, 1915.

"It is the *sara* of the classic authors of India and is met with throughout the plains and lower hills and distributed to China. In the Punjab it often covers large tracts of country and is frequently planted in lines or dividing hedges, especially in low-lying localities subject to periodic inundation. Sir William Jones says: 'This beautiful and superb grass is highly celebrated in the Puranas, the Indian god of war having been born in a grove of it, which burst into flame; the gods gave notice of his birth to the nymph of the Pleiads, who descended and suckled the child; thence named Carticeya. The *cásá* (*kásá* or *káns*) vulgarly *casia* (*S. spontaneum*) has a shorter culm, leaves much narrower, longer and thicker hairs, but a smaller panicle, less compounded, without the purplish tints of the *sara;* it is often described with praise by the Hindu poets for the whiteness of its blossoms, which give a large plain, at some distance, the appearance of a broad river. Both plants are extremely useful to the Indians, who harden the internodal parts of the culms and cut them into implements for writing on their polished paper. From the *munj*, or culm, of the *sara* was made the *maunji*, or holy thread, ordained by Menu to form the sacerdotal girdle, in preference even to the *cusa* grass.' *Munj* fiber is obtained from the leaf sheaths; the blades are the *sar* or *sara* used in thatching houses and as a paper material; the contained flowering stem is the *bind* or *vind;* the panicle or flowering stem is the *sirki*, *til*, or *thili*, used in thatching boats, carts, etc.; *sentha* or *kana* is the lower, stronger portions of the flowering stem, used in the manufacture of chairs, stools, tables, baskets, and screens; and *tilak*, *tilon*, or *ghua* are names that denote the flowers. Some of these names, such as *munj* and *sara*, have been supposed to denote the products of different species, instead of different parts of one and the same plant; hence has originated much of the confusion that prevails. *Sara* is used in paper making and *munj* as a textile fiber. The much-prized *munj* is strong, elastic, and has a wonderful power of enduring moisture without decaying. It is extensively employed in the manufacture of cordage, ropes, the famed Delhi mats, and in the preparation of baskets, etc. *Munj* mats are reported to be proof against white ants, but are hard on shoe leather, harsh to the foot, and fatiguing when walked on for any length of time. These are largely produced in Allahabad, Agra, Delhi, and are traded in all over India, and within recent years have begun to find their way to Europe. In the early spring the old grass is often fired, when shortly after a crop of young leaves is produced from the stools, which is much valued as fodder." (*Watt, Commercial Products of India, p. 929–930.*)

40990. Passiflora edulis Sims. Passifloraceæ. **Passion fruit.**

From Garrawin, Mangrove Mountain, via Gosford, Sydney, Australia. Presented by Mr. J. Harrison. Received July 28, 1915.

"Seeds of our commercial variety of *P. edulis*, of which we in this district are the principal growers." (*Harrison.*)

40991. MANGIFERA INDICA L. Anacardiaceæ. **Mango.**

From Manila, Philippine Islands. Presented by Mr. William S. Lyon, Gardens of Nagtajan. Received August 4, 1915.

Seeds sent in continuation of Mr. Lyon's experiments in shipping mango seeds to the United States. Three plants are being grown from the six seeds received.

40992. PASSIFLORA EDULIS Sims. Passifloraceæ. **Passion fruit.**

From Tucuman, Argentina. Presented by Mr. H. F. Schultz, horticulturist, Agricultural Experiment Station. Received August 2, 1915.

"Seeds of a superior yellow-fruited variety of Passiflora grown at Calilegua, Argentina. I expect to plant this variety quite extensively in this province under different local conditions of soil and climate. We have recently had very severe weather, the temperature going down to 5° C. below zero, which naturally has resulted in considerable damage to tender tropical and subtropical trees." (*Schultz.*)

40993. PSIDIUM GUAYABITA A. Richard. Myrtaceæ. **Guayabita.**

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received August 5, 1915.

"This is a species peculiar to the western portion of Pinar del Rio, where it is called *guayabita del Pinar*. The fruit is edible, but not very valuable. A very popular aromatic liquor is prepared from the fruit, and there is a factory in Pinar del Rio which has patented the product with the name of *Licor de guayabita del Pinar*." (*Roig.*)

40994 and 40995.

From Santiago de las Vegas, Cuba. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received August 3, 1915.

40994. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. **Guinea oil palm.**

"Seeds of the oil palm obtained from an old plant growing on the property of Sr. Brito, near Santiago de las Vegas. This palm seems to be at home here, but it is very rarely seen in cultivation. It has already been introduced into the United States at various times." (*Popenoe.*)

40995. ENTEROLOBIUM CYCLOCARPUM (Jacq.) Griseb. Mimosaceæ.

"*Oreja de judío.* A fine leguminous tree extensively used in this region as a shade tree along avenues and carreteras. Of the four or five different species used on the rock road from Santiago de las Vegas to Havana this is certainly one of the best, growing to a considerable height and branching to form a symmetrical, rounded head of deep-green foliage, giving a fairly dense shade and presenting an attractive appearance. While it has already been planted in Florida, I know of no avenues of it in that State, and it might advantageously be propagated at Miami, I believe, with the intention of testing it as an avenue tree." (*Popenoe.*)

40996. COLOCASIA ESCULENTA (L.) Schott. Araceæ. **Taro.**

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder.

"(No. 208. *Uahi a Pele.*) The varietal name means 'smoke of Pele,' or 'volcano smoke,' Pele being the goddess or spirit of the volcano Kilauea. The leaf blade is dark olive bronze, shaded with purple; petiole maroon, varying from dark to light. The sap is reddish. The plant is very ornamental." (*R. A. Young.*)

40997 to 40999. PRUNUS spp. Amygdalaceæ.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received August 9, 1915.

40997. PRUNUS MAXIMOWICZII Rupr. **Maximowicz's cherry.**

"Collected July 24, 1915."

"A tree about 25 feet high, with horizontal branches. Leaves obovate, about 1½ inches long, somewhat coarsely toothed, nearly glabrous; petioles slender, about one-half inch long. Flowers white, on slender hairy peduncles, one or two on each flowering shoot. Fruit crimson, the size of small peas. Japan." (*Kew Bulletin, New Garden Plants, 1903.*)

See S. P. I. No. 40189 for previous introduction and description.

40998. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehder.) **Sargent's cherry.**

"Seed. Arboretum, 1915."

"A species which has been confused with [the Japanese flowering cherry heretofore called] *P. pseudo-cerasus*, from which it differs by having all its parts glabrous. It is nearest allied to *P. serrulata*, differing by having sessile umbels and more coarsely toothed leaves. Japan." (*Kew Bulletin, New Garden Plants, 1909.*)

See S. P. I. Nos. 38761 and 40190 for previous introductions and description.

40999. PRUNUS YEDOENSIS Matsum. **Flowering cherry.**

"Seed. Arboretum, July 12, 1915."

"A rather large tree with smooth branches and gray bark; young leaves pubescent along the veins; older leaves quite glabrous, broadly elliptic or ovate to oblong; base acute, oblique, or subrotund. Flowers precocious, rose-tinted fading to white, in 2 to 3 flowered corymbs. This tree differs from *P. pseudo-cerasus* in its precocious flowers, its pilose style, and its somewhat pubescent petioles and pedicels. Cultivated in gardens in Tokyo. (Adapted from the original description, *Tokyo Botanical Magazine, vol. 15.*)

41000. AMYGDALUS DAVIDIANA (Carr.) B. S. and Z. Amygdalaceæ. (*Prunus davidiana* Franch.) **Wild peach.**

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., August 8, 1915.

"(No. 2299a. Peking, China, May 19, 1915.) Stones of the well-known *davidiana* peach; a valuable stock for various stone fruits. Purchased from a native collector who obtained them in the Western Hills, near Peking." (*Meyer.*)

41001. CANARIUM AMBOINENSE Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received August 14, 1915.

"A burseraceous tree 80 to 90 feet high, closely related to *C. moluccana*, but differing in the nearly smooth, oblong fruit, that of *C. moluccana* being very rough and very much more elongate. This tree branches about 25 feet from the ground, trunk about 8 feet in circumference; possesses large arching prop roots at the base; bark smooth and white; crown umbrella shaped." (*Hochreutiner, Plantae Bogoriensis Exsiccatae, p. 55.*)

41002. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael fruit.**
(*Aegle marmelos* Correa.)

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Botanic Gardens. Received August 31, 1915.

See S. P. I. Nos. 24450 and 33094 for previous introductions and description.

41003. POUTERIA CAIMITO (Ruiz and Pav.) Radlkofer. Sapotaceæ. **Abiu.**
(*Lucuma caimito* Roem. and Schult.)

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, Escola Agricola de Lavras. Received August 5, 1915.

"A timber tree with edible fruits. It looks very much like *cabelludinho.* The fruit is a beautiful golden yellow and is the shape of the fruit of the *limão do matto.* The fruit is somewhat sticky, but of a delicious flavor. The one we have on our place is a beautiful bush at present and would do very well as an ornamental plant. It is found in the States of Espirito Santo, Sao Paulo, and Minas Geraes." (*Hunnicutt.*)

41004. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Amoy, China. Presented by Mrs. L. W. Kip, at the request of Mr. John M. Nixon, New York City. Received August 21, 1915.

"Some of the seeds came from Canton and Swatow, though I could not see any difference in the fruits from those grown in this region. The Chinese say that the litchi does not come true from seed, so they propagate it by scraping some of the bark from a branch and wrapping mud around it till rooted. Should do well in Florida and southern California and would be sure to flourish in Porto Rico." (*Kip.*)

41005. FRAGARIA CHILOENSIS (L.) Duches. Rosaceæ. **Strawberry.**

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, consul general. Received August 20, 1915.

"Wild strawberry seeds, forwarded to this office by Prof. Abelardo Pachano, of the chair of agronomy, Escuela de Agronomia, Ambato, Ecuador, who writes as follows: 'Seed of Fragaria (*frutilla* as we call them). Please remember that they grow most extensively at Huachi, a country sandy and dry as the Sahara.' This is the only species recorded from Ecuador, but there may be others, and if so seeds will be procured and forwarded." (*Goding.*)

41006 and 41007. FRAGARIA spp. Rosaceæ. **Strawberry.**

From Bogota, Colombia. Presented by Mr. Thaddeus A. Thompson, American minister. Received August 21, 1915. Quoted notes by Mr. Thompson.

"The consuls in Barranquilla and Cartagena inform me that they believe this section of Colombia is the only one which produces strawberries, and I am of the opinion that they are more or less correct in their belief."

41006. FRAGARIA CHILOENSIS (L.) Duches.

"*Chile.* Seeds of a rather white strawberry, which, I understand, is brought from a considerable distance, and which is not usually called a strawberry (*fresa*), but is known by the name of *chile.*"

41007. FRAGARIA VESCA L.

"Seeds of the common red strawberry, which is procurable here throughout the year."

41008. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ. **Tacaco.**

From Costa Rica. Presented by Mr. Carlos Wercklé, at the request of Mr. J. E. Van der Laat, director, Department of Agriculture. Received August 20, 1915.

"Leave the fruits until shriveled, then put them in a pile of rotten leaves or very loose peat, as they do not sprout if planted in common garden earth." (*Wercklé.*)

See S. P. I. Nos. 26244, 26245, and 36592 for previous introductions.

41009 to 41016. TRITICUM spp. Poaceæ. **Wheat.**

From Northern Circle, Jubbalpore, Central Provinces, India. Presented by G. Evans, Deputy Director of Agriculture. Received July 30, 1915.

41009 to 41011. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41009. *Hansi pissi* (soft Hansi).

41010. *Sukerhai pissi* (soft Sukerhai).

41011. *Murya.*

41012 to 41016. TRITICUM DURUM Desf.

41012. *Bansi.*

Bansi is described as a hard red wheat by Watt, in Commercial Products of India.

41013. *Dahutia.*

Probably the same variety that Watt describes as *Daodia*, soft and starchy, white.

41014. *Howrah.*

41015. *Jalalia.*

Watt, in Commercial Products of India, describes this as hard and glutinous, white.

41016. *Tigharia.*

41017 to 41029. TRITICUM spp. Poaceæ. **Wheat.**

From Petrograd, Russia. Presented by Dr. Robert Regel, chief, Bureau of Applied Botany. Received August 17, 1915. Quoted notes by Dr. Regel.

41017 to 41023. TRITICUM AESTIVUM L.
(*Triticum vulgare* Vill.)

41017. "No. 126. Var. *ferrugineum* Al., subvariety *sibiricum.* Collected in Perm Government, 1906. Received from the Agricultural Society of the Province. Called *Krasnokoloska*, spring form. Grown by the bureau (pure line 0272A2, 1914, sowing 75, Government of Voronezh)."

41018. "No. 273. Var. *ferrugineum* Al., subvariety *rossicum.* Collected in Tomsk Government, 1903. Received through Prof. Prjanishnikov. Spring form. Grown by the bureau (pure line 062A2, 1913, sowing 46, Voronezh Government)."

41019. "No. 902. Var. *alborubrum* Körn., subvariety *orientale.* Collected in Bokhara, 1909. Received from exhibition in Tashkent from the collection of Bokharian Emir. Winter form. Grown by the bureau (sowing 30, 1911–12, Petrokof Government)."

41017 to 41029—Continued. (Quoted notes by Dr. R. Regel.)

41020. "No. 1423. Var. *erythrospermum* Körn., subvariety *duriusculum*. From Samarkand Province, 1909. Received from Mr. Nurmatov. Called *Kizyl-bogara*, spring wheat. Grown by the bureau (pure line 0326A4, 1914, experiment field of Prasnovodopadsk)."

41021. "No. 1879. Var. *lutescens* Al., subvariety *poltawense*. Collected in Ekaterinoslav Government, 1910. Received from the Agricultural School, Mariinsko. Called *Poltavka*, spring form. Grown by the bureau (sowing 43, 1911, Kursk Government)."

41022. "No. 1986. Var. *graecum* Körn., subvariety *amylosum*. Collected in Samara Government, 1910. Received through Mr. Tshechovitsh. Called *Chirinka*, spring form. Grown by the bureau (pure line 0402A3, 1913, sowing 64, Elisabetpol Government)."

41023. "No. 3237. *T. compactum* Host., var. *fetisowii* Körn., subvariety *burnaschewi*. Collected in Semiretshje Province, 1912. Received from Agricultural School of Kopal. Called *Teremkovaja*, spring form. Grown by the bureau (original sample, C. Flaxsberger)."

41024 and 41025. TRITICUM DICOCCUM Schrank.

41024. "No. 417. Var. *farrum* Bayle, subvariety *arras* Hochst. Collected in Samara Government, 1908. Received from Mr. Jelagitsh. Spring form. Grown by the bureau (pure line 094A4, 1913, sowing 66, Voronezh Government)."

41025. "No. 859. Var. *rufum* Schubl., subvariety *maturatum*. Collected in Samara Government, 1909. Received from Mr. Karamzin. Spring form. Grown by the bureau (pure line 0139A3, 1912, sowing 54, Voronezh Government)."

41026 to 41028. TRITICUM DURUM Desf.

41026. "No. 236. Var. *hordeiforme* Host., subvariety *densiusculum*. Collected in Tomsk Government, 1903. Received through Prof. Prjanishnikov. Spring form. Grown by the bureau (pure line 074A3, 1914, sowing 75, Voronezh Government)."

41027. "No. 465. Var. *coerulescens* Bayle. Collected in Tomsk Government, 1907. Received through Mr. Korenko. Spring form. Grown by the bureau (pure line 0295A4, 1914, sowing 75, Voronezh Government)."

41028. "No. 830. Var. *hordeiforme* Host., subvariety *laxiusculum*. Collected in Kursk Government, 1909. Received through Mr. Malzew. Spring form. Grown by the bureau (pure line 0123A4, 1913, sowing 66, Voronezh Government)."

41029. TRITICUM TURGIDUM L.

"No. 533. Var. *speciosissimum* Körn. Collected in Tiflis Government. 1908. Received from Miss Mlokosjevitsh. Grown by the bureau (pure line 0212A2, 1912–13, sowing 61, Elisabetpol Government)."

41030 and 41031.

From Songdo, Chosen (Korea). Presented by Rev. C. H. Deal, Anglo-Korean School. Received August 12, 1915.

41030. RAPHANUS SATIVUS L. Brassicaceæ. **Radish.**

41030 and 41031—Continued.

41031. BRASSICA CHINENSIS Jusl. Brassicaceæ. **Pakchoi.**

"Korean cabbage. I think this is strictly a Korean article, as I have never met with it anywhere else. It grows very much like celery, but with leaves very much like a turnip or mustard leaf. The stems are stocky and blanch beautifully. It is used here for making a kind of pickle called *Kimchi*. The natives call the cabbage *Pächōō*, which would be a good name in case you have not already introduced the seed under another name. The seeds are planted in the fall, about September, in hills about 15 inches apart each way and thinned to one stalk to a hill. It is not gathered until after frost, just before the first heavy freeze. It takes a good deal of water and rich land and plenty of fertilizer." (*Deal.*)

41032 to 41051. TRITICUM spp. Poaceæ. **Wheat.**

From Tunis, northern Africa. Presented by L. Guillochon, Botanical Service. Received August 17, 1915.

"Varieties commercially cultivated in Tunis, but selected by the Agricultural Experiment Station Service." (*Guillochon.*)

41032 to 41034. TRITICUM AESTIVUM L. (*Triticum vulgare* Vill.)

41032. *Allorca.*

41033. *Mahon.*

41034. *Richelle.*

41035 to 41051. TRITICUM DURUM Desf. **Durum wheat.**

41035. *Médéah.*

41036. *Biskri Smooth.*

41037. *Namira.*

41038. *Real Forte.*

41039. *Lenah Khetifa.*

41040. *Sbei.*

41041. *Agili Pubescent.*

41042. *Smooth Sbei.*

41043. *Taganrog.*

41044. *Mekki.*

41045. *Mahmoudi.*

41046. *Mahmoudi* A G^3.

41047. *Azizi.*

41048. *Adjini.*

41049. *Allemand.*

41050. *Berbern.*

41051. *Souri.*

41052. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**

(*Nephelium litchi* Cambess.)

From Hongkong, China. Presented by Mr. H. Green, acting superintendent, Botanical and Forestry Department. Received August 30, 1915.

See S. P. I. No. 38779 for description.

41053. DIMOCARPUS LONGAN Lour. Sapindaceæ. **Longan.**

(*Nephelium longana* Cambess.)

From Littleriver, Fla. Presented by Mr. Charles Simpson. Received August 30, 1915.

"The longan tree is likewise a native of southern China, where it is cultivated for the sake of its fruit. Its leaves have generally five pairs of leaflets much resembling those of the litchi, but it is readily distinguished by its flowers having a deeply 5-parted calyx. The longan is a smaller fruit than the litchi, varying

from 1 inch to 1½ inches in diameter and quite round, with a nearly smooth, brittle skin of a yellowish brown color. It contains a similar semitransparent pulp, of an agreeable sweet or subacid flavor, and is largely sold in the markets." (*Treasury of Botany, vol. 2, p. 784.*)

To be tested as a stock for *Litchi chinensis.*

See S. P. I. Nos. 32006, 34206, and 39551 for previous introductions.

For an illustration of the longan tree in fruit in Florida, see Plate III.

41054. LITCHI CHINENSIS Sonnerat. Sapindaceæ. **Litchi.**
(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received September 2, 1915.

"*Wai chih li chi.*"

See S. P. I. No. 38779 for description.

41055. PENNISETUM LONGISTYLUM Hochst. Poaceæ.
Kikuyu grass.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany. Cuttings received September 3, 1915.

"*Kikuyu* grass. We originally obtained this grass from British East Africa, which, so far as our experience goes, would appear to be one of the most promising grasses that we have in this country. So far, although the grass has been under cultivation at our botanical station for the past four years, it has shown no signs of forming seed, and it was only last summer that it flowered and enabled us to have it determined botanically. The grass has a creeping habit, and cattle are passionately fond of it; it also makes a nice hay grass." (*Evans.*)

41056. ALLIUM CEPA L. Liliaceæ. **Onion.**

From Teheran, Persia. Presented by Col. J. N. Merrill, Persian Army. Received September 3, 1915.

"Onion seed from Tarum, which is about 24 miles west of Zendjan (Zinjan), in western Persia. Mr. R. S. Reed, Controller of Finances of Zendjan, was kind enough to get me the seed. Tarum has an altitude of about 4,000 feet; irrigation is used; soil gravelly, probably contains alkali. They are the largest onions I have seen, some of them being 6 inches in diameter by 4 in depth or larger. Mr. Reed says the onions of Tarum are much esteemed by the Persians, who eat them raw, as they have such good flavor." (*Merrill.*)

41057. MYRCIARIA FLORIBUNDA (West) Berg. Myrtaceæ.
Guava berry.

From St. Croix, Danish West Indies. Presented by Mr. Longfield Smith, director, Agricultural Experiment Station. Received August 30, 1915.

"Seeds of the guava-berry tree. The fruits of this tree make a delicious preserve with an aromatic flavor; they are also used with rum for making a liquor called guava-berry rum." (*Smith.*)

THE LONGAN, DIMOCARPUS LONGAN LOUR. (NEPHELIUM LONGANA CAMBESS.), IN FRUIT IN FLORIDA. (SEE S. P. I. No. 41053.)

This highly prized southern Chinese fruit tree bears abundantly in Florida, but the fruits appear to have little value, perhaps because selection has not been carried on to any extent. The profuse fruiting habit, the flourishing condition of this tree in Reasoner Brothers' tropical fruit shed, and the value placed on the fruit by the Chinese indicate that a thorough study of the various strains of this tree should be made. (Photographed by Wilson Popenoe, Oneco, Fla., August 19, 1914; P16166FS.)

FRUITS OF THE JAPANESE APRICOT, PRUNUS MUME SIEB. AND ZUCC., S. P. I. No. 28685. (SEE S. P. I. No. 41061.)

These exceedingly sour fruits, which resemble small greenish or yellow apricots and when perfectly ripe remind one of the American plum in flavor, are eaten in great quantities in Japan in the form of pickles and are said to have formed a portion of the army ration of the Japanese troops during the Russo-Japanese war, their effect being to quench the thirst. The fruits are pickled in brine with the leaves of the oil plant (*Perilla arguta*), which give them a reddish color and an aromatic taste. This apricot is the so-called "flowering plum," or "mume," of Japanese literature, and its extremely picturesque flowering branches are even more common on Japanese screens than are those of the famous flowering cherries. It is a greater favorite among Japanese poets than the cherry. It flowers so early that it is often caught by late snows and frost, and as few insects are flying at that time, it may need hand pollination. (Photographed June 22, 1915, from fruits sent from the Chico Field Station; natural size; P13508FS.)

41058 to 41061. PRUNUS spp. Amygdalaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received September 7, 1915.

41058 to 41060. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehder.) **Sargent's cherry.**

41058. *Yamazakura* seeds from Koganei, near Tokyo.

41059. *Yamazakura* seeds from Arashiyama, Kyoto.

41060. *Yamazakura* seeds from Yoshino, Nara.

See S. P. I. Nos. 38761, 40190, and 40623 for previous introductions and description.

41061. PRUNUS MUME Sieb. and Zucc. **Japanese apricot.**

"A deciduous tree of rounded habit, 20 to 30 feet high, with smooth, lustrous twigs. Leaves 2½ to 4 inches long, roundish or broadly ovate, contracted at the end into a long tapering point, sharply and often doubly toothed, with scattered hairs on both sides, becoming smooth except about the midrib beneath; leafstalk one-half to three-fourths inch long. Flowers pale rose, 1 to 1¼ inches across, produced singly or in pairs (each on a very short stalk) from the joints of the previous year's wood; petals broadly obovate; calyx one-half inch across, with oblong rounded lobes. Fruit described as yellowish, globose, 1 to 1¼ inches wide, scarcely edible; shell of nut perforated. Native of Korea and perhaps China. It is much cultivated in Japan for ornament, and the double-flowered form was originally introduced to Europe from that country by Messrs. Baltet, of Troyes, in 1878. It was first distributed as *'P. myrobalana, fl. pleno.'* a name which still clings to it in many places. It is a true apricot, not a plum. In late years it has been imported from Japanese nurseries in quantity and in various forms; of these the following are now in our gardens: *Alba* (white), *alba plena* (double white), *flora plena* (double rose), *pendula* (weeping). The flowers are delicately perfumed. This apricot is very valuable in gardens, especially the double-flowered forms, for its early, profuse flowering, being in bloom generally about the same time as the almond, and at its best almost as beautiful. It should be given a sheltered place. It can be distinguished from the common apricot by the longer, more slender apex to the leaf." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 244.*)

"The pickled *mume* fruits form part of the army ration of the Japanese soldier. They are among the sourest things known. The trees are hardy at Washington, and some varieties flower in February." (*Fairchild.*)

See S. P. I. Nos. 9211 to 9216, 28685, and 34582 for previous introductions.

For an illustration of the fruits of this apricot, see Plate IV.

41062. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Manila, Philippine Islands. Presented by the director, Bureau of Agriculture. Plants received July 22, 1915.

See S. P. I. No. 25887 for description.

41063. ORYZA SATIVA L. Poaceæ. **Upland rice.**

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicut, director, Escola Agricola de Lavras, through Mr. C. C. Knight, vice director. Received August 5, 1915.

"I do not know the name of the variety of this rice, as they do not pay much attention to varietal names here. However, this past year was very hard for upland rice, as we had a protracted drought of six weeks, but this rice made a crop. Another variety grown in the same field failed to make a crop." (*Hunnicut.*)

41064 to 41087. TRITICUM spp. Poaceæ. Wheat.

From Sydney, New South Wales, Australia. Presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 26, 1915.

"The department's plant breeder states that the following varieties are winter wheats here, but if sown at the same season as such sorts in America they would probably be winterkilled. It is suggested that they be sown as spring wheat, with the exception of *Marster's Perfection* [S. P. I. No. 41072], which should stand the frosts of winter. It may be mentioned that samples of the ordinary varieties recommended to farmers in this country have invariably been sent abroad, and almost without exception have proved unsuitable for American and European conditions; it has been found that they either become eaten up with spring rust or do not survive the winters." (*Valder.*)

41064 to 41071. TRITICUM AESTIVUM L. (*Triticum vulgare* Vill.) **Wheat.**

41064. No. 4. Very early; harvested 1913.

41065. No. 9. Very early; harvested 1913.

41066. No. 3. Very early; harvested 1914.

41067. No. 14. Midseason to early; harvested 1914.

41068. No. 8. Very early; harvested 1914.

41069. No. 11. Very early; harvested 1913.

41070. No. 2. Very early; harvested 1914.

41071. *Warren* (ordinary). Midseason; harvested 1914.

41072. TRITICUM TURGIDUM L.

Marster's Perfection (Poulard). Very late; harvested 1913.

41073 to 41087. TRITICUM AESTIVUM L. (*Triticum vulgare* Vill.)

41073. *Tarragon* (ordinary). Rather late; harvested 1914.

41074. *Sunset* (ordinary). Very early; harvested 1914.

41075. *Jumbuck Cross* (ordinary). Medium early; harvested 1914.

41076. *Canberra* (ordinary). Very early; harvested 1914.

41077. *Bomen* (ordinary). Medium early; harvested 1914.

41078. *Cleveland* (ordinary). Rather late; harvested 1913.

41079. *Hard Federation* (ordinary). Early; harvested 1913.

41080. *Federation* (ordinary). Midseason; harvested 1914.

41081. *Steinwedel* (ordinary). Early; harvested 1913.

41082. *Purple straw* (ordinary). Midseason; harvested 1914.

41083. *Cedar* (ordinary). Early; harvested 1914.

41084. *Cowra No. 16* (durum). Late, a beardless durum hybrid; harvested 1913.

41085. *Jonathan* (ordinary). Midseason; harvested 1914.

41086. *Florence* (ordinary). Early maturing; harvested 1914.

41087. *Thew* (ordinary). Early maturing; harvested 1914.

41088 to 41091. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. **Mandarin.**

From Redland Bay, Queensland. Presented by Mr. James Collins. Cuttings received September 9, 1915. Quoted notes by Mr. Collins.

41088. "*Excelsior* (hybrid). Tree robust, heavy cropper, no thorns, fruit large, skin tight, coarse while trees are young, very juicy, season late, good, color scarlet."

41089. "*Burrum Beauty* (hybrid). Tree robust, branches inclined to weep a little, good cropper, thorny, fruit very large, skin loose, quality fair, color scarlet."

41090. "*Coomber's Perfection* (true mandarin). Possibly the best mandarin grown, tree robust, upright grower, very thorny, not a very heavy cropper, fruit large, heavy, and firm, best quality."

41091. "*Ellendale Beauty* (hybrid). Tree robust grower, heavy cropper, fruit large to very large, firm and heavy, rather brisk flavor, good cropper, quality fair, color scarlet."

41092 to 41096. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

From Kingston, Jamaica. Presented by Mr. William Harris, Hope Gardens. Fruits received September 9, 1915.

41092. Spiny green.
41093. Large smooth green.
41094. Medium-sized green.
41095. Small green.
41096. Long white.

41097 to 41123.

From Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received September 8, 1915. Quoted notes by Mr. Cook.

41097. XANTHOSOMA sp. Araceæ.

"No. 1399. *Qquelluuncucha.* Amaybamba, Peru, June, 1915. A variety with small roots that are preserved by drying and are called *chuños*, like the potato dried by freezing in the high plateaus. This variety is not acrid like the other, and the foliage is often cooked for greens."

Tubers.

41098. CURCUMA sp. Zinziberaceæ.

"No. 1442. *Palillo chuncho.* Santa Ana, Peru, July 8, 1915. A plant cultivated in the lower Urubamba Valley for its aromatic yellow-fleshed rootstocks which are used for coloring food. For this purpose *palillo* is considered superior to *annatto* and is an article of trade among the natives. To be raised for identification."

Rootstocks.

41099. CITRUS sp. Rutaceæ. **Sweet lime.**

"No. 1667. Santa Ana, Peru, July 7, 1915. A large and very vigorous form of the sweet lime, a rather popular fruit in the Urubamba Valley."

Cuttings.

41100. CANNA EDULIS Ker-Gawler. Cannaceæ. **Canna.**

"No. 1674. Santa Ana, Peru, July 8, 1915. Altitude, 3,000 feet. A cultivated variety, different from that found previously near Intihuatana, the tubers being green and white instead of red. The flowers are scarlet and somewhat larger than those of the other variety."

Rootstocks.

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41101. XANTHOSOMA sp. Araceæ.

"No. 1678. Santa Ana, Peru, July 2, 1915. Var. *Qquelluuncucha.* Supposed to be the same as No. 1399 (S. P. I. 41097), but the tubers somewhat smaller and longer. Grown at an altitude of about 3,000 feet."

Tubers.

41102. FRAGARIA sp. Rosaceæ. **Strawberry.**

"No. 1767. San Miguel, Tocontoy, Peru, July 10, 1915. Plants of a wild strawberry grown at an altitude of about 8,000 feet."

41103. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ. (*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"No. 1768. *Yuca.* San Miguel, Peru, July 10, 1915. Cuttings of a seed-bearing native variety grown at the upper rim of the tropical belt at an altitude of 6,000 feet. For testing in the South and in California in comparison with the variety from Lima."

41104. OPUNTIA sp. Cactaceæ. **Spineless prickly-pear.**

"No. 1788. Tocontoy vicinity, Peru. A spineless form found by Prof. Hiram Bingham in the Urubamba Valley below Ollantaytambo. Of possible interest on account of the large size of the leaves, which are of a delicate texture and not unpleasant in taste. The spiny form is very common throughout the Urubamba Valley, being planted commonly for hedges."

Cuttings.

41105. ESCALLONIA MYRTILLOIDES L. f. Escalloniaceæ.

"No. 1827. *Tasta.* Pinasniocj, Peru, July 14, 1915. A tree related to the *Chachacoma*, but with much smaller leaves and more horizontal branches, giving the general appearance of a hemlock or other coniferous tree. Attains an altitude of 12,000 feet where heavy frosts are of nightly occurrence during the winter. Should be tested first along the Pacific coast."

Cuttings.

41106. SOLANUM sp. Solanaceæ.

"No. 1859. Pinasniocj, Peru, July 16, 1915. A native tree attaining a height of 20 to 25 feet and a diameter of 1 foot. Grows at an altitude of 11,000 to 12,000 feet, and flowers in the winter when frosts are of almost nightly occurrence. Blossoms in large clusters, angular bell shaped, pendent; yellowish outside, within rich violet with a network of fine yellow veins; peculiar and very attractive. May thrive on the Pacific coast."

Cuttings.

41107. (Undetermined.)

"No. 1861. *Masuca.* Pinasniocj, Peru, July 16, 1915. Willowlike shrub belonging to the family Melastomaceæ, with very handsome pendent flowers closely resembling those of Fuchsia. The calyx is red and the corolla deep blue. The branches are straight and upright and very tough, furnishing material for making baskets. The *masuca* comes from a high altitude where frosts are common and should be hardy enough to thrive along the Pacific coast, at least as far north as San Francisco."

Plants.

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41108. (Undetermined.)

"No. 1862. Pinasniocj, Peru, July 16, 1915. *Masuca.* Same as 1861 [S. P. I. No. 41107], but from a different plant."

Plants.

41109. SOLANUM sp. Solanaceæ.

"No. 1860. Pinasniocj, Peru, July 16, 1915. Same as 1859 [S. P. I. 41106], but from a different tree with flowers of a somewhat deeper color."

Plant.

41110. EUGENIA sp. Myrtaceæ.

"No. 1863. Pinasniocj, Peru, July 16, 1915. Cuttings of an extremely beautiful tree, with fine glossy deep-green foliage contrasting with a smooth, light-colored, graceful trunk and branches. Should be tried, especially along the Pacific coast. Likely to become a general favorite if conditions prove favorable for its development. Should be easily propagated from cuttings. This material is from a selected tree of which photographs were taken."

41111. HESPEROMELES OBLONGA Lindley. Malaceæ.

"No. 1874. Pinasniocj, Peru, July 16, 1915. *Lengli.* A very attractive tree, with deep-green, hollylike foliage and clusters of red berries. Somewhat resembling our thorn-apple trees, Crataegus, but with much more handsome evergreen foliage. Should be of interest for the Pacific coast if it is found to thrive."

Plants.

41112. ESCALLONIA RESINOSA (R. and P.) Persoon. Escalloniaceæ.

"No. 1886. Pinasniocj, Peru, July 17, 1915. *Chachacoma.* A tree of ornamental value, producing clusters of white flowers for a long period during the winter months. The trees attain a height of 30 or 40 feet and a diameter of 2 to 3 feet. The wood is of excellent quality, having very little grain, and used especially for carving and household utensils. Should endure frosts and may prove useful, especially along the Pacific coast."

Cuttings.

41113. SOLANUM sp. Solanaceæ.

"No. 1890. Pinasniocj, Peru, July 17, 1915. *Quita naranjo.* A shrub attaining a height of 6 to 8 feet, with very tough wood. The habits of growth, the clean, fresh green foliage and clusters of white flowers all unite to give a remarkable resemblance to the orange tree. This is recognized in the native name, which means 'wild orange.' The plant should be of ornamental value in the open air in the warmer parts of the country and perhaps indoors."

Cuttings.

For an illustration of the *Quita naranjo*, see Plate V.

41114. BUDDLEIA INCANA Ruiz and Pavon. Loganiaceæ.

"No. 1892. Pinasniocj, Peru, July 16, 1915. *Quishuar.* A tree with grayish foliage somewhat resembling the olive, with rather attractive clusters of yellow flowers. It grows on the high table-lands of southern Peru where frosts are of frequent occurrence during the winter season. It grows rapidly and propagates readily from cuttings. The wood is

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

said to be very hard and durable. Of possible interest for ornamental planting or windbreaks in the coast district of southern California."

Cuttings.

41115. (Undetermined.)

"No. 1907. Ollantaytambo, Peru, July 19, 1915. *Panti.* A medicinal plant much used among the Indians and sometimes cultivated. Evidently a composite, with a tuberous root not unlike the *Yacon* (Polymnia), but smaller."

Roots.

41116. OPUNTIA sp. Cactaceæ.

"No. 1918. Ollantaytambo, Peru, July 20, 1915. Spineless or nearly spineless forms of this cactus are not uncommon in the Urubamba Valley."

Cuttings.

41117. SOLANUM sp. Solanaceæ.

"No. 1937. Cuzco, Peru, July 26, 1915. A shrub attaining a height of 6 to 8 feet, but flowering when only 3 to 4 feet high. The flowers of an attractive blue color are in clusters and borne through the winter, even in dry exposed places where severe frosts occur every night. Of interest on account of its extreme hardiness and of possible value as an ornamental along the Pacific coast and elsewhere."

Cuttings.

41118. CANNA sp. Cannaceæ. **Canna.**

"No. 1971. Below San Miguel, Peru, June, 1915. A species cultivated in the upper rim of the tropical belt at an altitude of about 6,000 feet."

Rootstock.

41119. XANTHOSOMA sp. Araceæ.

"No. 1676. Santa Ana, Peru, July 2, 1915. Var. *Huascamanuco.* A variety with deep pinkish flesh, one of the favorite sorts about Santa Ana."

Tubers.

41120. XANTHOSOMA sp. Araceæ.

"No. 1677. Santa Ana, Peru, July 2, 1915. Var. *Picauncucha.* A variety with large tubers and of good quality, but requires thorough cooking, as the flesh is said to be extremely acrid when raw."

Tubers.

41121. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"No. 1680. Santa Ana, Peru, July 6, 1915. *Yuca.* A native seed-bearing variety of cassava grown at an altitude of 3,000 feet. For experimental planting in the South and possibly in California."

Cuttings.

41122. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"No. 1973. Lima, Peru, August 17, 1915. *Yuca.* A variety grown along the coast between Lima and Callao, in a rather cool climate. Should be tested in California, as well as in the Southern States."

Cuttings.

THE QUITA NARANJO, SOLANUM SP., AN ORNAMENTAL SHRUB FROM THE MOUNTAINS OF PERU. (SEE S. P. I. No. 41113.)

The clean, fresh foliage, the clusters of white flowers, and the globular fruits with the habit of growth unite to give this Solanum a remarkable resemblance to the orange tree. It is a shrub attaining a height of 6 to 8 feet, and because of its ornamental value should be tried in the mild-wintered portions of the United States, and perhaps also as a greenhouse shrub. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Ollantaytambo, Peru, May 18, 1915; natural size; P18110CA.)

A FIELD OF MOLASSES GRASS, MELINIS MINUTIFLORA BEAUV., S. P. I. NO. 28768, FROM BRAZIL. (SEE S. P. I. NO. 41148.)

A South African grass, commonly cultivated in Brazil, which has grown well in Florida and elsewhere in the Gulf States. It is said to be eaten greedily by cattle and horses, because of the sticky secretion on the blades, which is said to amount to as much as 3.22 per cent of the dry digestible matter. In the field it is of a purplish color, the sticky secretion sometimes being so evident as to look like frost on the leaves, leading observers to believe that the grass was frost resistant. (Photographed at the Gainesville, Fla., Experiment Station, by Peter Bisset, November 14, 1912; P10391FS.)

41097 to 41123—Continued. (Quoted notes by Mr. O. F. Cook.)

41123. CANTUA BICOLOR Lem. Polemoniaceæ.

"No. 1934. Ollantaytambo, Peru, July 25, 1915. Cuttings of a wild plant found about 1 league from Huarocondo, along the road from Ollantaytambo. The flowers are somewhat smaller and lighter in color than those of the cultivated *Cantua buxifolia*."

Cuttings.

41124. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. **Tangerine.**

From Brazil. Presented by Rev. A. J. Holt, Kissimmee, Fla., who secured the seeds from Rev. R. E. Pettigrew, Paranagua, Brazil. Received September 10, 1915.

"Seeds of the Brazilian tangerine. Mr. Pettigrew tells me that these are from the finest tangerine that grows, that it is as large as a grapefruit and sells in New York at 25 cents each." (*Holt.*)

41125 to 41127. ORYZA SATIVA L. Poaceæ. **Rice.**

From Sao Paulo, Brazil. Presented by the Director de Agriculture e Industria Pastoril. Received August 13, 1915.

41125. No. 1. *Arroz agulha peludo* (hairy needle rice).

41126. No. 2. *Catete dourado* (golden catete).

41127. No. 3. *Arroz Valenciano* (Valencia rice; Bomba 10 Extra Florete).

41128. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Fruits received September 12, 1915.

See S. P. I. No. 25887 for previous introduction and description.

41129. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Naples, Italy. Presented by Mr. Jay White, American consul. Received September 8, 1915.

"Freestone peach seed of a variety known locally as *Mala Rosea* and grown in Sorrento, Italy, by Signor Casagrande. The fruit is considered one of the best varieties of table peaches grown in the vicinity of Naples." (*White.*)

41130 to 41132. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Foochow, China. Presented by Mr. Albert W. Pontius, American consul. Received September 7, 1915. Quoted notes by Mr. Pontius.

41130. "*Hung chiang* or 'red peach.' The season for ripening is from the early part of May to the middle of June."

41131. "*Pai chiang* or 'white peach.' Ripening from June to the end of July."

41132. "*Kuang ying* peach. Ripens from July to the middle of August. This is the smallest variety of the three."

41133. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael fruit.**
(*Aegle marmelos* Correa.)

From Gujranwala, India. Presented by Rev. H. S. Nesbitt, manager, Boys' Industrial Home. Fruits received September 11, 1915.

"Five large specimens which are more rare here and four little scrub specimens which are the wild kind that grow in the jungles. They are sought for by camel owners, who ascribe some virtue to them and periodically feed them to their camels. They are so hard that they require to be broken under a hammer or a stone." (*Nesbitt.*)

41134. PIMENTA OFFICINALIS Lindley. Myrtaceæ. **Allspice.**

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Hope Gardens. Received September 9, 1915.

"A small tree with smooth, white bark, 25 to 30 feet high, native of the West Indies and Central America. The dried unripe berries, which are the size of small peas, are the allspice or pimento of commerce. The name 'allspice' is due to a supposed resemblance of the spice to a combination of the odour and flavor of cinnamon, nutmeg, and cloves. The tree was introduced into Ceylon over a century ago and established at Peradeniya, where it flowers in dry weather and occasionally sets a few fruits, but outside the Botanic Gardens it is rarely met with in this country. It is considered to yield best in a hot and rather dry climate, and prefers a loose loamy or alluvial well-drained soil. In Jamaica the berries are picked by hand while green but just ripe, and are then dried in the sun, the latter process taking six to ten days. The fruits are known to be sufficiently dry when the seeds rattle on shaking and are a dark colour. A crop can not be expected within six or seven years from the time of planting, and when in full bearing a tree will yield a hundredweight of the dried spice. Jamaica is the only country that exports this spice, which is sold at present in England at about 2d. to 3d. per pound." (*Macmillan, Handbook of Tropical Gardening and Planting.*)

41135 to 41141.

From San Jose, Costa Rica. Presented by Mr. J. E. Van der Laat, director, Department of Agriculture, through Mr. Carlos Wercklé. Received September 13, 1915. Quoted notes by Mr. Wercklé.

41135 to 41140. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

"We have here a few exceptionally good varieties of the chayote, but, very strange, they are seldom found in the market; the variety called *chayota zapayo* (*zapayo* means squash), which is simply enormous, I have never seen elsewhere than in Tarras, a little village near Cartago. There is a form of the *cocora*, quite small, but very prolific, which has nothing of the fibrous felt around the seed (endocarp). The dark-green varieties produce more tubers than the light-colored ones; in the cold highlands (where the chayote does best) they take from a single plant as much as 100 pounds of roots every year. The plant grows and produces fruit also in the torrid lowlands, but it produces nearly no tubers. We have here some round fruits (nearly spherical)."

41135. Small white.
41136. Spiny white.
41137. Large light green.
41138. Large white.
41139. Large dark green.
41140. Large light green.

41135 to 41141—Continued. (Quoted note by Mr. C. Wercklé.)

41141. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ. **Tacaco.**

"The *tacaco* is not of a perishable nature, as the chayote; it has a hard skin when ripe and keeps in perfect condition for weeks; at last it shrivels and in this state it is planted. The fruits for planting are chosen from those which fall off the vine when dead ripe. They can not be planted in the soil; they do not sprout. The best way is to bury them in rotting leaves on the earth, with a layer of dead leaves on them."

Fruits.

41142. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Swatow, China. Presented by Mr. G. C. Hanson, American consul. Received September 14, 1915.

"The two common strains of peaches in the vicinity of Swatow are locally called the cling and the free varieties. There is also a third variety of a hard and bitter nature, not edible except when preserved. This, the free strain, named so because the flesh does not adhere to the stone, ripens about the middle of July. It is a sweet peach and a better fruit than the cling variety. The seeds of this peach are used for medicinal purposes by the Chinese. The peaches grown here are greatly inferior to the American varieties. Peaches raised from the seeds are natural fruits, which are small and tasteless. The trees need to be budded before the edible peach can be produced." (*Hanson.*)

41143. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Calcutta, India. Presented by Mr. H. G. Carter, economic botanist, Botanical Survey of India Department, Indian Museum. Received September 7, 1915.

"*Sankalu.*"

See S. P. I. No. 38665 for previous introduction and description.

41144 to 41146. ORYZA SATIVA L. Poaceæ. **Rice.**

From Sao Paulo, Brazil. Presented by the Director de Agriculture e Industria Pastoril. Received September 13, 1915.

41144. No. 1. *Arroz Goyano* (rice from Guiana).

41145. No. 2. *Arroz Jaguary* (rice from Jaguary, Minas Geraes).

41146. No. 3. *Agulha* (needle), from the littoral (Iguape).

41147 and 41148.

From Macuco, Estado do Rio, Brazil. Presented by Mr. T. R. Day. Received September 13, 1915.

41147. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"*Mamão* (pronounced *mammong* very nearly, with accent on the second syllable) appears to be the same as the papaya of India, but the fruit here, like that of the Brazilian mango, is superior to the Indian varieties we have encountered, although it is not so much esteemed here as it is by the natives in India. These seeds are of an unusually good variety, and we think that if not already introduced or experimented with, it is well worth a trial in the United States in sheltered places where there is practically no winter. It will grow in any soil and fruits within twelve

41147 and 41148—Continued.

months, continuing in bearing for some four or five years. Among other uses it serves as a very good shade tree for young fruit plantations of tender varieties, as it is such an extraordinarily rapid grower and is very easily cut out when it has served its part." (*Day.*)

41148. MELINIS MINUTIFLORA Beauv. Poaceæ. **Molasses grass.**

"There are two grasses here that are worthy of special mention, the doubt as to adaptability being with regard to the winters in the Southern States, which I understand are in some places fairly severe. They are called *Capim gordura roxa* [molasses grass] and *Capim jaraguá. Capim gordura roxa* means literally 'greasy purple grass.' I have seen *Capim gordura roxa* live down the wild fern that is such a plague in some districts, and it forms (where not pastured) a dense carpet between 3 and 4 feet thick, upon which it was almost possible to walk. Riding or walking through it in the pasture under normal conditions, the proportion of wax and grease on the blades is sufficient to thoroughly clean and polish one's boots; this is no exaggeration, but is often remarked. It is not a watery grass, but unusually palatable to cattle and horses, and the blades secrete a wax or grease that, according to one analysis, totals as much as 3.22 per cent of the dry digestible matter. It is perceptible to the fingers, which it makes quite sticky. I have not met it in any other country, and I believe that it is indigenous to the central part of Brazil, not thriving right down in the south nor in the sandier coast States of the north. It is a fairly good drought resister and comes up fairly well again after a fire. There is a related variety called *Capim gordura blanco* (blanco means white), of a bright emerald-green color, but without the resistance of the *roxa*, and also not stooling so well. I have found both of the above grasses growing away from the sea level up to 2,000 meters on Caparao, the highest mountain of Brazil, and I have found it at 1,000 meters living down wild fern; both these altitudes are subject to frosts, and I have also ridden through it on the uplands of Minas Geraes coated with a dense white frost." (*Day.*)

For an illustration of a field of molasses grass, see Plate VI.

41149. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Chungking, China. Presented by the American consul. Received September 14, 1915.

"Seeds of two different strains of peaches which are commonly cultivated in this vicinity. These peaches are locally known under the names of *Hsiang t'ao*, or fragrant peach, and *Chieh t'ao*, or firm peach. The *Hsiang t'ao* is a large peach and its skin and meat are partly red. It becomes soft when ripe, and the seed is readily extracted. It has a very delicious flavor. The *Chieh t'ao* is slightly smaller in size than the *Hsiang t'ao* and when ripe its meat is still quite firm. This peach ripens in this climate during the latter part of June, while the *Hsiang t'ao* ripens about a fortnight earlier. This is also a very finely flavored peach, but, however, not quite so sweet as the other one. A point that I should like to call attention to is the comparative freedom of these peaches from imperfections, a fact which is noteworthy in view of an absence of pest-preventive measures." (*Myrl S. Myers.*)

The seeds of these two varieties were accidentally mixed; therefore only one number was assigned.

41150. RHEEDIA BRASILIENSIS (Mart.) Pl. and Tr. Clusiaceæ. **Pacuri.**

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received September 13, 1915.

See S. P. I. 37802 for previous introduction and description.

41151. PANAX QUINQUEFOLIUM L. Araliaceæ. **Ginseng.**
(*Aralia quinquefolia* Decne. and Planch.)

From Mukden, China. Presented by Mr. P. S. Heintzleman, American consul. Received September 16, 1915.

"Owing to unfavorable climatic and soil conditions in the district immediately surrounding Mukden, ginseng is not grown here; however, I have succeeded in securing a small quantity. This plant is harvested during October in the outlying district of Fengtien Province." (*Heintzleman.*)

41152. HORDEUM VULGARE COERULESCENS Seringe. Poaceæ. **Barley.**

From Amoy, China. Presented by Mr. L. Maynard, American consul. Received August 20, 1915.

"Barley grown in the Province of Amoy and locally known as the '*Black Rice* variety.'" (*Maynard.*)

41153. HORDEUM DISTICHON NODUM L. Poaceæ. **Berley.**

From Lyallpur, Punjab, India. Presented by Mr. D. Milne, economic botanist, Department of Agriculture, through Mr. Wynne Sayer, assistant to the Agricultural Adviser to the Government of India, Pusa, India. Received July 22, 1915.

Subvar. *ianthinum.* Two-rowed, huskless, purple, naked variety.

41154. SACCHARUM OFFICINARUM L. Poaceæ. **Sugar cane.**

From Pretoria, Transvaal, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Cuttings received September 13, 1915.

"*Uba* sugar cane. From Winklespruit Experiment Farm, Natal." (*Evans.*)

41155 to 41162. HORDEUM spp. Poaceæ. **Barley.**

From Cawnpore, United Provinces, India. Presented by Mr. H. M. Leake, economic botanist. Received June 15, 1915. Quoted notes by Mr. Leake.

41155. HORDEUM DISTICHON NUDUM L.

"No. 128. Two-rowed huskless, from Bulandshahr."

41156. HORDEUM VULGARE COELESTE L.

"No. 27. Six-rowed huskless, from Dehra Dun."

41157. HORDEUM VULGARE HIMALAYENSE Rittig.

"No. 359. From Gorakhpur."

41158 to 41161. HORDEUM VULGARE L.

41158. "No. 25. Six-rowed, from Naini Tal."

41159. "No. 222. Six-rowed, from Bareilly."

41155 to 41162—Continued. (Quoted notes by Mr. H. M. Leake.)

41160. "No. 48. Six-rowed, from Kheri."

41161. "No. 59. Six-rowed, from Kheri."

41162. HORDEUM VULGARE VIOLACEUM Körn.

"Red barley. Six-rowed, from Cawnpore Farm."

41163. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

From Buenos Aires, Argentina. Presented by Mr. W. D. Backhouse, through Mr. W. F. Wight, of the Bureau of Plant Industry. Tubers received September 6, 1915.

"From a few miles southeast of La Plata, in the Province of Buenos Aires, at a few meters' altitude above a lagoon, on land that had never been cultivated. The potatoes grew in small patches and the tubers were surprisingly good. Though this species flowers very profusely, it apparently does not seed. I had a patch isolated and inclosed some hundred plants, and not one seed was obtained. The tubers are by no means plentiful, either. The whole patch only gave about a kilo, and the biggest was about 2 inches in diameter." (*Backhouse.*)

41164. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Tsama melon.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received September 20, 1915.

"I have been able to get in touch with a gentleman living in the Kalahari Desert who is able to secure the true *Tsama* melon, which grows about 250 miles farther west than his place. I do not know whether you are aware that it is extremely difficult to get the true article from the Kalahari, owing to the fact that the natives have an intense dislike to letting the seed leave the country and are up to all kinds of tricks to prevent it. Much of the so-called *Tsama* that appears in South Africa is the common *Kafir* melon or *Manketaan*, which appears to be far less drought resistant and not nearly so serviceable for desert regions." (*Davy.*)

This is the remarkable forage melon of the Kalahari, which furnished much of the feed for the huge herds of wild animals formerly pasturing there.

41165. LILIUM PHILIPPINENSE Baker. Liliaceæ. **Benguet lily.**

From Manila, Philippine Islands. Presented by the director, Department of Agriculture. Bulbs received September 24, 1915.

41166. (Undetermined.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received September 30, 1915.

41167. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received September 28, 1915.

'*Bangkoewang.* This variety is the only one cultivated by the natives here." (*The Director.*)

See S. P. I. Nos. 38665 and 41143 for previous introductions and description.

41168 to 41243.

From Peru. Collected by Mr. O. F. Cook, of the Bureau of Plant Industry. Received September 16, 1915. Quoted notes by Mr. Cook.

41168 to 41176. OXALIS TUBEROSA Molina. Oxalidaceæ. **Oca.**

"A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food. In some districts ocas are second only to potatoes, while in others ullucus are more important, or at least are sold more generally in the native markets. Ocas are eaten raw as well as cooked, and are also frozen and dried. Ocas prepared in this way are called *caya*, a term corresponding to *chuño* (*chunyo*), the name of the dried potatoes. Raw ocas when first dug have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun. The plant attains a height of 1 foot or more and has the general appearance of a large sheep sorrel. The flowers are yellow and the leaflets are folded at night or in wet weather, the same as sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. Some are preferred for eating raw and others for the making of *caya*. The texture of the tubers is very tender, crisp, and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. The range of colors is much the same as in the *ullucu*, but no deep-yellow varieties were seen, nor any with spots, except that some have bands of deeper color across the eyes. In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. If the taste should prove acceptable, ocas might become very popular for salads and pickles, if not for other purposes. The nature and habits of the plant indicate that it may be adapted to acid soils, which would be a distinct advantage in some parts of the United States."

Tubers.

41168. "No. 2021. Ollantaytambo, Peru, June 16, 1915. *Zapallo* oca. Pale yellow color of squash, with deep red bands across eyes; large specimens 8.5 cm. by 4 cm."

41169. "No. 1223. Ollantaytambo, Peru, June 16, 1915. *Higos* oca."

41170. "No. 2033. Sicuani (Ushcopata), Peru, April 9, 1915. Ten tubers in one hill."

41171. "No. 2026. Sicuani, Peru, April 4, 1915. *Hanccolema*. White variety, scarcely pinkish at the ends. More slender than the *papa* oca."

41172. "No. 2030. Sicuani, Peru, April 9, 1915. *Cachu* oca. Smaller and more slender than the others (*papa* oca, No. 2025, and *hanccolema*, No. 2026), and eyes not so close set. Pinkish all over, but much lighter than the preceding. Considered better for eating raw."

41173. "No. 2032. Sicuani (Ushcopata), Peru, April 9, 1915. *Yuracj* oca. At Ushcopata, a few miles above Sisuani, two more kinds of ocas were found, a reddish variety, smaller than *papa* oca, called *pocalluchu*, and a white variety, with very broad fasciated stems, called *yuracj* oca."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41174. "No. 2034. La Paz, Bolivia, August 4, 1915. A white variety, pinkish at the eyes and at the tips. Strongly thickened at the end, like the red variety, but the eyes closer together."

41175. "No. 2035. La Paz, Bolivia, August 4, 1915. A uniform pink variety, in form nearly cylindrical."

41176. "No. 2036. La Paz, Bolivia, August 4, 1915. A deep red variety, strongly thickened at the end. Eyes rather remote."

For illustrations of oca plants showing rootstocks, see Plates VII and VIII.

41177 to 41184. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Ullucu.**

"The *ullucu* or *papa lisa* is a root crop raised generally in the highlands of Peru and Bolivia, in the region where potatoes are grown. The tubers have a remarkably close resemblance to potatoes, except that the skins are smoother and the colors brighter, running from white through various intermediate shades to deep yellows and reds. There are also spotted varieties, white and pink or light yellow and pink. Judging from its representative in the native markets, the *papa lisa* ranks next to the potato in popular favor in Peru, being used largely in the making of soups, which is the principal branch of the culinary art among the Indians. The flavor of the *papa lisa* is peculiar and usually not attractive to the unaccustomed palate. But being one of the plants that accompany the potato in Peru, it may not be without interest to observe its behavior in the United States. The tubers are produced in abundance, and if the plant should be found to grow readily the possibilities of utilization should be carefully studied. The plant is a relative of the so-called Madeira vine, familiar in cultivation as an ornamental climber. A wild *ullucu*, common in the region of Sicuani, is very similar to the Madeira vine, but the plants of the cultivated varieties do not attain a length of more than 2 or 3 feet. The general appearance and habit of growth are also somewhat like those of the sweet potato."

41177. "No. 2027. Sicuani, Peru, April 9, 1915. *Papa lisa.* Yellow, spotted with pink."

41178. "No. 2028. Ushcopata, a few miles above Sicuani, Peru, April 9, 1915. *Papa lisa.* Yellow, size very variable, sprouts light pink."

41179. "No. 2038. Cuzco, Peru, April 18, 1915. *Papa lisa.* Small round yellow or yellowish pink variety."

41180. "No. 2039. Cuzco, Peru, April 18, 1915. *Papa lisa.* Long, pinkish purple, enlarged at the base. Sprouting mostly at the tip. Sprouts dark pink, thick."

41181. "No. 2040. Cuzco, Peru, April 18, 1915. *Papa lisa.* White variety, elongated form. Sprouting from upper end."

41182. "No. 2041. Cuzco, Peru, April 18, 1915. *Papa lisa.* White variety, with pink blotches, rounded form. Uniform in shape. Well sprouted, slightly withered."

41183. "No. 2043. Lima, Peru, August 17, 1915. Color, pale greenish yellow; the largest variety of *ullucu* seen in Peru."

41184. "No. 2044. Lima, Peru, August 17, 1915. Color, deep pinkish yellow. Tubers large and broad."

For an illustration of the ullucu, see Plate IX.

PLANT OF THE OCA, OXALIS TUBEROSA MOLINA, FROM THE MOUNTAINS OF PERU AND BOLIVIA, SHOWING THE ROOTSTOCKS AND THE TYPICAL OXALIS FOLIAGE. (SEE S. P. I. NOS. 41168 TO 41176.)

This plant, which has the general appearance of a large sheep sorrel, attains a height of a foot or more and bears 20 or more thickened rootstocks, which are largely used for food, being second only in importance to potatoes in some districts of Peru and Bolivia. The plant may be suitable for acid soils, as certain related species are, and the tubers may have value for salads or pickles, if not for general use as a vegetable. The rootstocks sometimes attain a length of 3 inches, with a diameter of 1½ inches, and vary greatly in form and color, but are generally attractive in appearance. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Sicuani, Peru, April 10, 1915; about one-fourth natural size; P17751CA.)

ROOTSTOCKS OF THE OCA, OXALIS TUBEROSA MOLINA, A VEGETABLE FROM THE ANDES OF PERU AND BOLIVIA. (SEE S. P. I. NOS. 41168 TO 41176.)

Ocas are eaten raw as well as cooked and also when frozen and dried. The tubers are tender and crisp, but juicy, and when first dug have a distinctly acid taste, which is lost on exposure to the sun. The color varies from white to light pink and through darker pinks and yellows to deep purplish red. The surface of the tubers is smooth, so that in general appearance they are very attractive. In form, some tubers are nearly cylindrical, while others are slender at the base, becoming strongly thickened at the apex. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Santa Rosa, Peru, April 12, 1915; natural size; P17783CA.)

THE ULLUCU, ULLUCUS TUBEROSUS CALDAS, ONE OF THE MOUNTAIN ROOT CROPS OF PERU AND BOLIVIA. (SEE S. P. I. NOS. 41177 TO 41184.)

In Peru the ullucu, or papa lisa, ranks next in popularity to the potato, being used largely in making soups. The tubers resemble the potato very closely, except that the skins are smoother and the colors brighter, running from white through various intermediate shades to deep yellows and reds. There are also varieties spotted white and pink or light yellow and pink. The flavor is peculiar and may not be attractive to American palates, but as the tubers are produced in abundance, the possibilities of utilization should be carefully studied. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Santa Rosa, Peru, April 12, 1915; natural size; P17784CA.)

PLANT OF THE ANYU, TROPAEOLUM TUBEROSUM RUIZ AND PAVON, A PERUVIAN MOUNTAIN ROOT CROP. (SEE S. P. I. NOS. 41185 AND 41186.)

This rather close relative of the ordinary nasturtium of our gardens is cultivated in the plateau region of Peru for its tubers, which are eaten like potatoes, ocas (*Oxalis tuberosa* Molina), and ullucus (*Ullucus tuberosus* Calder), but chiefly in the form of soups. The tubers are unusually good keepers, some having reached Washington in good condition in mid-September which were collected in early April. They are of at least two forms, one with short coarse purple stripes mostly near the very deep eyes, and the other with larger stripes of a lighter color. (Photographed by G. B. Gilbert for the Yale-National Geographic Society Peruvian Expedition, Sicuani, Peru, April 10, 1915; about one-fourth natural size; P17749CA.)

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41185 and 41186. TROPAEOLUM TUBEROSUM Ruiz and Pavon. Tropæolaceæ. **Anyu.**

"One of the Andean root crops, generally cultivated in the potato-growing districts of the plateau region of Peru. Though apparently less popular than the *oca* and *ullucu*, the *anyu* has one important advantage over all the Peruvian root crops, including the potato, in its keeping qualities. Specimens collected in the district of Sicuani on April 9 were kept for three months at Ollantaytambo and then brought to Washington, and were still in good condition the middle of September. This means that the *anyu* tubers would be very easy to handle commercially in case they should prove to be of use in the United States. In Peru they are eaten like potatoes, *papa lisas*, and *ocas*, chiefly in the form of soups. The *anyu* plant is a rather close relative of another Peruvian species, *Tropacolum majus*, a familiar ornamental cultivated in the United States under the name nasturtium. Hybrids between these two species might be of interest as affording a possibility of securing ornamental varieties that could be propagated from tubers. The flowers of *T. tuberosum* are not so large as those of *T. majus* and do not open so widely, but in other respects the general appearance is much the same. Experimental plantings of *anyu* should be made in the elevated districts in the Southwestern States and along the Pacific coast. In comparison with potatoes there appear to be very few varieties of the *anyu*."

41185. "No. 2024. Ollantaytambo, Peru, June 15, 1915. *Cheojche añu.* Spotted *anyu*. Strikingly marked with purple stripes, especially about the eyes. Two forms are found, one with short, coarse stripes, mostly confined to the vicinity of the eyes, which are very deep, with the surface very prominent between the eyes, making the outline very irregular. The other form has larger stripes of a somewhat lighter color. These are called *Pucacheojche;* the other *Yanacheojche*, or black striped.

41186. "No. 2031. Ushcopata, Sicuani, Peru, April 9, 1915. *Qquello* or yellow *anyu*. From Ushcopata, a few miles above Sicuani."

For an illustration of an anyu plant, see Plate X.

41187. CANNA EDULIS Ker-Gawler. Cannaceæ. **Canna.**

"No. 1674. Santa Ana, Peru, July 6, 1915. *Achria.* Canna cultivated at Santa Ana, entirely different from that below San Miguel. Tubers are superficial and green, flowers scarlet and of different form. Midribs of leaves dissolve into fine veins some distance below the apex. Plant looks like ordinary canna, familiar in the United States. Roots white where not green. Inflorescence joints come apart. Flowers not in good condition."

41188. POLYMNIA SONCHIFOLIA Poepp. and Endl. Asteraceæ.

"No. 2022. Ollantayambo, Peru, July 24, 1915. *Llacono.* A root crop grown sparingly about Ollantaytambo at altitudes of about 10,000 feet. The tubers resemble sweet potatoes externally, but are white and watery within and taste much like Jerusalem artichokes."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41189 to 41192. (Undetermined.)

41189. "No. 624. Ollantaytambo, Peru, June 8, 1915. From a small liliaceous plant on a reforested terrace, 1 league above Ollantaytambo. The tubers are like small yams or calathea tubers. To be raised for identification."

Tubers.

41190. "No. 1069. Colpani, Peru, June 1, 1915. *Pulla-pulla.* A liliaceous plant, to be raised for identification."

Bulbs.

41191. "No. 225. Tinta, Peru, April 16, 1915. Cactus, *Ayrampo.* Planted on walls."

Cuttings.

41192. "No. 1923. Ollantaytambo, Peru, July 20, 1915. Cactus."

Cuttings.

41193. FURCRAEA sp. Amaryllidaceæ.

"No. 1917. Ollantaytambo, Peru, July 20, 1915. *Chuchao.* A native fiber plant very abundant in the dry districts about Ollantaytambo and ascending to an altitude of over 10,000 feet. Propagates by bulblets which are produced on the inflorescence, with or without flowers. May have possibilities as a hardy type very easy to propagate."

41194. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Ullucu.**

"No. 2023. La Paz, Bolivia, August 4, 1915. *Papa lisa.*"

Tubers.

41195. TROPAEOLUM TUBEROSUM Ruiz and Pavon. Tropaeolaceæ. **Anyu.**

"No. 2029. Ushcopata, Sicuani, Peru, April 9, 1915. *Pucaañu.* From Ushcopata, a few miles above Sicuani. Marked with purplish across the eyes. See No. 2024 [S. P. I. 41185]."

Tubers.

41196. ULLUCUS TUBEROSUS Caldas. Basellaceæ. **Ullucu.**

"No. 2037. Santa Ana, Peru, July 6, 1915. *Papa lisa.* Raised at Vilcabamba, Peru. Round, deep-yellow variety, variable in size."

Tubers.

41197 to 41243. SOLANUM TUBEROSUM L. Solanaceæ. **Potato.**

"Peru is the home of the potato, which is the principal crop throughout the region of the high table-lands and along the eastern and western slopes of the Cordilleras. On the western slopes, which are exposed to the cold, the cultivation of potatoes is carried down to the shores of the Pacific, but on the eastern slope seldom extends below 8,000 feet, corn becoming the dominant crop below 10,000 feet. The number of potato varieties is very large, and a very great diversity of forms is shown, far beyond anything with which we are familiar in the United States. Unlike the varieties of corn, most of which are named only by color, the potato varieties have special names, though strains of different colors are recognized in many of the varieties. No attempt was made to secure a complete collection of varieties, but a series of photographs was made in order to show the general range of forms. The specimens were brought back with a view to supplementing the collection of South American varieties made by Mr. W. F. Wight in 1913."

Tubers.

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41197. "No. 1974. Ollantaytambo, Peru, June 16, 1915. *Pucaqquehuillo chaucha.* Long, slender, curled like sweet potatoes, deep-red color. *Chaucha* means early. Considered earliest variety; matures in six months. Season slow because of cold. May do well in northern regions."

41198. "No. 1975. Ollantaytambo, Peru, June 16, 1915. *Alccatarma.* Pink and white, looks like *huayruru* [S. P. I. No. 41208]; in Cuzco and Sicuani. Has the same depressed form."

41199. "No. 1976. Ollantaytambo, Peru, June 16, 1915. *Pucacompis.* Pink all over; very deep eyes."

41200. "No. 1977. Ollantaytambo, Peru, June 16, 1915. *Paltasunchus.* Flat like *Alccatarma* [S. P. I. No. 41198], with shallow eyes. Color white."

41201. "No. 1978. Ollantaytambo, Peru, June 16, 1915. *Yanapuiban. Pucacompis* [S. P. I. No. 41199] form, but deep dull purple or lead color."

41202. "No. 1979. Ollantaytambo, Peru, June 16, 1915. *Alccacompis.* Small, round, rather deep eyes, color white and pink. Name *alcca* means spotted or of two colors."

41203. "No. 1980. Ollantaytambo, Peru, June 16, 1915. *Ccohuisullluchi.* Small, flat, crooked, white and purple; apparently same as variety from Cuzco called *Pucasuituche.*"

41204. "No. 1981. Ollantaytambo, Peru, June 16, 1915. *Yanaberundus.* Long, oval or tapering, deep purple color, *yana* meaning black."

41205. "No. 1982. Ollantaytambo, Peru, June 16, 1915. *Chorillo.* Long form, white, deeply notched across eyes."

41206. "No. 1983. Ollantaytambo, Peru, June 16, 1915. *Muruchunqui.* Large, flat, slightly purplish, but dull, with deep purple or blackish spots."

41207. "No. 1985. Ollantaytambo, Peru, June 16, 1915. *Yanacusi.* Flat, crooked, deep purplish with notch below the eyes."

41208. "No. 1986. Cuzco, Peru, July 23, 1915. *Huayruru.* White and red spotted. Form flattened. Grown around Cuzco."

41209. "No. 1987. Cuzco, Peru, July 23, 1915. A deep purple long variety."

41210. "No. 1988. Cuzco, Peru, April 6, 1915. *Petiquiña.* Dark purple, cylindrical with many deep eyes."

41211. "No. 1989. Cuzco, Peru, April 6, 1915. *Lluturuntu.*"

41212. "No. 1990. Cuzco, Peru, April 6, 1915. *Soccohuaccoto.* Color light bluish."

41213. "No. 1991. Cuzco, Peru, April 6, 1915. *Ellusunchu.* In form like *Pucacompis* [S. P. I. No. 41199] and with the same deep eyes except that they are smaller and their color lighter."

41214. "No. 1992. Cuzco, Peru, April 6, 1915. *Yanacusi.* Outside dull grayish or clay color. Inside deep purplish under the skin, then white with bluish lines in the flesh."

41215. "No. 1993. Cuzco, Peru, July 29, 1915. *Pichireto.* Long oval, small eyes, grows large, surface mottled purplish, pink and white. Interior white, sprout red."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41216. "No. 1994. Cuzco, Peru, July 29, 1915. *Pucapetiquiña.* A well-known form, flesh yellow, purple-red under skin; one tuber with a purple-red core. Uniform reddish color outside."

41217. "No. 1995. Cuzco, Peru, July 29, 1915. *Pucacañari.* Extreme form of *Petiquiña* group with large prominence under each eye. Color red like *Pucapetiquiñas.*"

41218. "No. 1996. Cuzco, Peru, July 29, 1915. *Chilquehuarmi.* Similar form to *Cheqquepuru,* but eyes more shallow and short like transverse slits. Uniform."

41219. "No. 1997. Cuzco, Peru, July 29, 1915. *Cheqquepuru* or *Murupetiquiñas.* Short deep eyes, white and dark-purple in large patches, to which the name *Murupetiquiñas* has reference. Flesh yellow, with a few scattered purplish spots along the boundary lines."

41220. "No. 1998. Cuzco, Peru, April 6, 1915. *Lomo.* A rather promising form, long, like the variety from below Panticalla Pass, but tinged with pinkish red instead of with purple. Eyes shallow, outside color yellow and pink spotted. White within. Size small; form long, cylindrical, or tapering at one or both ends. Surface smooth. Considered the best variety of the lot. Raised in quantities around Cuzco."

41221. "No. 1999. Cuzco, Peru, April 6, 1915. *Pucaberundus* or *Lequechu.*"

41222. "No. 2000. Cuzco, Peru, April 6, 1915. *Sale.* Some with terminal buds, some still dormant. Small, round, reddish, with deep eyes, like small-sized *Pucacompis* [S. P. I. No. 41199].

41223. "No. 2001. Cuzco, Peru, April 6, 1915. A common variety, rounded or somewhat square, with very deep eyes."

41224. "No. 2002. Cuzco, Peru, April 6, 1915. *Aspasuncho.*"

41225. "No. 2003. Cuzco, Peru, April 4, 1915. *Suayllu.* Color reddish ('carmisa') outside and in. Shape long, size large, quality good. A few around Cuzco, but more productive and larger at higher altitudes."

41226. "No. 2004. Cuzco, Peru, April 18, 1915. *Suituche* or *Ccohuisullo* or *Pucasuituche* or *Pucaccohuisullo.* Small, long, dull purple, but yellowish around eyes, deep purple, irregular. Seems to be a rare variety, not familiar to most of those asked about it."

41227. "No. 2005. Cuzco, Peru, April 6, 1915. *Pucasuayllu.* Flesh creamy yellow, tinged with purple next the skin."

41228. "No. 2006. Cuzco, Peru, April 6, 1915. *Poccoya* or *Phoccoya.* Red, with deep eyes."

41229. "No. 2007. Cuzco, Peru, April 4, 1915. *Caylluhuacoto,* previously called *Caillulıuacot.* Yellow outside, white within; large, round; planted about Cuzco, Chincheros, etc."

41230. "No. 2008. Arraranca, Peru, April 12, 1915. *Ccanchalli.* White, strongly mottled with purple. Grown at the highest altitude, 14,000 feet. Curious in having most of the eyes on one side, the other side flat."

41231. "No. 2009. Tinta, Peru, April 16, 1915. *Leqquerunto.* Very smooth skin."

41168 to 41243—Continued. (Quoted notes by Mr. O. F. Cook.)

41232. "No. 2010. Tinta, Peru, April 16, 1915. *Yuracjpetiquiña.*"

41233. "No. 2011. Arraranca, Peru, April 13, 1915. *Tutu.* Grown at the highest altitude of potato culture, about 14,000 feet. Plant No. 179. Has very strong purple rootstocks, the tubers also purple, eyes very large and prominent, subtended by a broad scale with a spine in the middle, like the *oca* and *anyu.* Foliage coarse. Said to be used only for making chuños."

41234. "No. 2012. Pinasniocj, Peru, July 16, 1915. *Cusi* or *Pucacusi.* Dark russet brown outside, purplish flesh, eyes deep. Considered a very fine variety. Altitude, 12,000 feet."

41235. "No. 2013. Pinasniocj, Peru, July 16, 1915. *Qquellopuiban.* Appearance like *Chilquehuarmi* [S. P. I. 41218]. Buds somewhat longer and with smaller eyes. Yellowish inside, whence the name. Altitude, 12,000 feet."

41236. "No. 2014. Pinasniocj, Peru, July 16, 1915. *Pucatarma.* Flat, oval, pink, shallow eyes; popular in market of Cuzco, on account of small eyes and smooth surface. Altitude, 12,000 feet."

41237. "No. 2015. Pinasniocj, Peru, July 16, 1915. *Muruchocjllus* or *Chocjllus.* Like *Petiquiña,* deep broad eyes, deep dull purple, spotted with white. Another smaller variety is called *Muruchancha.* Larger specimen than found later at Cuzco. Altitude, 12,000 feet."

41238. "No. 2016. Pinasniocj, Peru, July 16, 1915. *Yanamalan.* Flat, oval, silvery gray, eyes broad with long excurrent ridges. Altitude, 12,000 feet."

41239. "No. 2017. Pinasniocj, Peru, July 16, 1915. *Charcahuaylla.* Large, long pointed, mottled with light grayish and dull bluish purple. Quality not considered especially fine. Form convenient for handling. Altitude, 12,000 feet."

41240. "No. 2018. Machu Picchu, Peru, May 28, 1915. Cultivated to a slight extent above Machu Picchu and on the slopes above San Miguel at an altitude of 6,500 feet. Tubers very small, rounded. Of interest as representing the lowest altitude of potato cultivation."

41241. "No. 2019. La Paz, Bolivia, August 5, 1915. Long, slender, flattened, and curled, like *Pucaqquehuillo chaucha* [S. P. I. 41197] from Ollantaytambo. Skin light pinkish. Eyes few and shallow. Terminal eye sprouted only."

41242. "No. 2020. Lima, Peru, August 16, 1915. Size variable, light grayish. Skin smooth. Eyes very deep, almost invisible. Space between eyes greatly swollen or puffed out. Terminal eyes shallow, sprouted. Flesh firm; considered a superior variety."

41243. "No. 2042. Machu Picchu, Peru, May 28, 1915. Cultivated to a slight extent above Machu Picchu and on the slopes above San Miguel at an altitude of 6,500 feet. Tubers long slender form, purple. Of interest as representing the lowest altitude of potato cultivation."

41244 and 41245. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Pungo Andongo, Angola. Presented by Rev. John C. Wengatz, Rome, N. Y. Received September 25, 1915.

Two varieties of native sorghums.

41244. "White *Masambala* or Kafir corn."

41245. "White *Masambala* or Kafir corn."

41246 to 41251. HORDEUM spp. Poaceæ. **Barley.**

From Petrograd, Russia. Presented by Mr. Robert Regel, chief, Bureau of Applied Botany. Received June 21, 1915.

41246. HORDEUM DISTICHON NUTANS Schubl.

41247. HORDEUM VULGARE PALLIDUM Seringe.

41248 to 41251. HORDEUM DISTICHON NUTANS Schubl.

41252 and 41253. AMYGDALUS spp. Amygdalaceæ. **Peach.**

From Catania, Italy. Presented by Mr. Joseph Emerson Haven, American consul. Received September 22, 1915. Quoted notes by Mr. Haven.

"Seeds are planted in the month of January and the fruits may be expected in three years in the months of July and August. The production in the Messina section of this district is fairly large, as also in the Palermo consular district, but very few peaches are grown in the immediate neighborhood of Catania."

41252. AMYGDALUS PERSICA L.
(*Prunus persica* Stokes.)

"The rough skinned is the ordinary peach of commerce, a clingstone and never very sweet. It is generally disappointing."

41253. AMYGDALUS PERSICA NECTARINA Ait. **Nectarine.**

"The smooth-skinned peach is found in considerable quantities. It is termed *Sbergia* in the Sicilian language, has an appearance of a golden plum shot with crimson lines, and bears a close relation to the nectarine. In size it is about the same as the crab apple and is a delicious fruit when properly ripe."

41254 and 41255.

From Para, Brazil. Presented by Mr. George H. Pickerell, American consul. Received September 9, 1915.

41254. ORBIGNYA SPECIOSA (Mart.) Barb. Rodr. Phœnicaceæ.
(*Attalea speciosa* Mart.) **Uauassu.**

"*Babassu* or *Uauassu*."

41255. VIROLA SURINAMENSIS (Rol.) Warb. Myristicaceæ.

"*Ucuúba*, gathered at Tuyue on the Purus River."

"In spite of being represented by a much smaller number of species, the Myristicaceæ are more important as timbers than the Annonaceæ, especially the two commonest species of the Amazon, *ucuúba branca* (*Virola surinamensis* Warb.) and *ucuúba vermelha* (*Virola sebifera* Aubl.). The first, especially, is one of the most useful trees of the Amazon region, not only for its easily worked wood, moderately hard, but also for its seeds, which furnish a kind of vegetable wax rich in stearin. While the *ucuúba*

41254 and 41255—Continued.

branca is found principally in the varzeas [probably meaning low, swampy valleys] it is not excluded from the terra firma [meaning dry ground]; the *ucuúba vermelha*, which is distinguished by its larger leaves and smaller fruits, is a tree of the dry land and is found principally in the forests. Both these species have, especially when young, a characteristic manner of growth, with slender whorled branches furnished with regularly distichous leaves. The regularity of its branching reminds one of the European conifers. Without doubt other Amazonian species of Virola and probably also some species of Iryanthera furnish wood which could be utilized, but I have no positive knowledge in regard to this." (*J. Huber, Mattas e Madeiras Amazonicas, Boletim de Museu Goeldi, vol. 6, p. 173, 1910.*)

41256 to 41269.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received September 27, 1915. Quoted notes by Mr. Meyer, except as otherwise indicated.

41256. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.
(*Myrica nagi* Thunb.)

"(No. 2306a. Hangchow, Chekiang, China, June 29, 1915.) A large-fruited variety of the so-called strawberry tree, or *nagi*. The fruits are the size of crab apples, of dark purple color, and of very attractive looks. They can be used in a multitude of ways, like out of hand, boiled in compotes, in pies, for sirup, and for wine. In general there exists a great variation among the trees as regards general habits, productivity, etc.; the fruits themselves vary also greatly in color, size, and taste. The best varieties are propagated by inarching; the trees are evergreen; they thrive best on well-drained, rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California. Chinese name *Yang mei*."

41257. PRUNUS SALICINA Lindley. Amygdalaceæ. **Plum.**

"(No. 2307a. Hangchow, Chekiang, China, June 29, 1915.) A medium-sized plum, clingstone, of reddish color, meat juicy and sweet in the center, but somewhat astringent near the skin and decidedly sour near the stone. The trees grow dense and low and are able to grow on water-logged land; that is, they thrive with the surface water only a few inches away at times. Of value for breeding purposes, especially in the Gulf Coast States."

41258. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 2308a. Chekiang Province, China, July, 1915.) Stones of various types of peaches, collected in Chekiang. To be sown in the South for experimental purposes."

41259. CHIONANTHUS RETUSA Lindley. Oleaceæ.

"(No. 2309a. Panshan, near Hangchow, Chekiang, China, June 29, 1915.) The Chinese fringe tree, generally seen as a shrub, but occasionally found as a tree, a most beautiful and striking object when covered with its multitude of small, finely dissected white flowers, which are delightfully fragrant. Bears in early fall masses of blue-black berries. This plant naturally loves rocky mountain slopes and contrasts well with

41256 to 41269—Continued. (Quoted notes by Mr. F. N. Meyer.)

bowlders and stones. It is used by Chinese gardeners in Shantung as a grafting stock for the tea olive, *Olea fragrans*, no doubt to keep the latter dwarf, and it withstands drought much better than when on its own roots. Much recommended as an ornamental garden and park shrub, especially for those sections of the United States where the winters are not too severe. Local Chinese name *Swe tsin tiao*."

41260. PREMNA MICROPHYLLA Turcz. Verbenaceæ.

"(No. 2310a. Mokanshan, Chekiang, China, August 6, 1915.) A deciduous shrub, from 3 to 10 feet in height, having glossy green leaves, resembling those of the lilac; flowers in panicles apparently white; berries black. Thrives in semishady places. Of value, possibly, as a hedge shrub for mild-wintered climates."

41261. AGYNEJA IMPUBES L. Euphorbiaceæ.
(*Glochidion sinicum* Hook. and Arn.)

"(No. 2311a. Mokanshan, Chekiang, China, August 6, 1915.) A shrub or small tree, growing from 2 to 20 feet in height, found on stony places mostly. Produces annual branches which resemble pinnated leaves on which flowers and fruits are being borne. Of value as a garden and park shrub in mild-wintered places."

41262. SYMPLOCOS STELLARIS Brand. Symplocaceæ.

"(No. 2312a. Mokanshan, Chekiang, China, August 3, 1915.) An evergreen shrub, with dense leathery foliage, like a rhododendron. Bears elongated, fleshy berries of blue color all along its wood, making a curious impression. Found in shaded spots on mountain slopes. Of value as a cover shrub in parks and gardens for the southern United States."

41263. EUSCAPHIS JAPONICA (Thunb.) Dippel. Staphyleaceæ.
(*Euscaphis staphyleoides* S. and Z.)

"(No. 2313a. Near Hangchow, Chekiang, China, June 26, 1915.) A shrub with deciduous pinnate leaves, bearing apparently white flowers, followed by capsules which turn from green to a brilliant red when ripening. Found on stony and waste places. Of use as a park shrub for mild-wintered regions."

"A deciduous bush up to 12 feet high, with stout, pithy branchlets and prominent buds; twigs smooth. Leaves 6 to 10 inches long, opposite, consisting usually of seven to nine leaflets. Leaflets opposite, ovate, 2½ to 4 inches long, long pointed, shallowly toothed, smooth except for a little down near the base of the midrib. Panicle terminal, branching, 4 to 9 inches long, carrying numerous yellowish white flowers, each about one-fourth inch across. Fruit consisting of three somewhat boat-shaped, spreading, rosy pink pods, one-half inch long, seeds black. Native of China, Korea, and Japan. As the specific name implies, this shrub is not only closely related to the bladder nuts (Staphylea), it also bears much resemblance to them. It differs in the larger number of leaflets, in the smaller individual flowers, and in the smaller, differently shaped fruit. Unfortunately, it is not very hardy and can only be grown outside permanently in the mildest localities." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 546.*)

41264. (Undetermined.)

"(No. 2314a. Purple Mountain, near Nanking, China, June 3, 1915.) A blueberry, of small growth, found on dry, rocky places at altitudes of about 1,000 feet above the sea. Bears edible berries."

41256 to 41269—Continued. (Quoted notes by Mr. F. N. Meyer.)

41265. RUBUS sp. Rosaceæ. **Raspberry.**

"(No. 2315a. Near Lungtun, Kiangsu Province, China, June 6, 1915.) A low-growing species of raspberry bramble, bearing large, beautiful-looking fruits, which are quite juicy, though lacking in any pronounced flavor. Occurs on grassy embankments and on mountain slopes. Of use probably in hybridization experiments."

41266. MEDICAGO HISPIDA DENTICULATA (Willd.) Urban. Fabaceæ. **Bur clover.**

"(No. 2316a. Nanking, Kiangsu Province, China, June 2, 1915.) A low-growing somewhat hirsute form of a common bur clover, found among grasses on waste lands and along roadsides. Of value possibly as a winter-forage plant in Pacific coast localities."

41267 and 41268. VICIA spp. Fabaceæ. **Vetch.**

41267. "(No. 2317a. Nanking, Kiangsu, China, June 2, 1915.) Low-growing vetch, found among short grasses on gravel lands. Of value possibly as a winter-forage plant in Pacific coast localities."

41268. (Nanking, Kiangsu, China, June 2, 1915.) Seed selected from Meyer's No. 2317a [S. P. I. 41267], because of evident specific differences.

41269. (Undetermined.)

"(No. 2318a. Mokanshan, Chekiang, China, July 23, 1915.) A climbing cucurbitaceous plant, having small, dissected leaves; bears small, soft, warty fruits. Of use as an ornamental porch and cover vine for semishady situations."

41270 and 41271.

From Suva, Fiji Islands. Presented by the superintendent, Department of Agriculture. Received September 30, 1915.

41270. CITRUS NOBILIS DELICIOSA (Tenore) Swingle. Rutaceæ. **Mandarin.**

"The local mandarins are most excellent in quality, of large size, good flavor, and juicy, but with skin rather coarse." (*C. H. Knowles.*)

Bud sticks.

41271. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ. **Lemon grass.**

See S. P. I. No. 40896 for previous introduction and description.

41272 and 41273. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

From Teheran, Persia. Presented by Mr. Ralph H. Bader, American vice consul. Received September 25, 1915.

41272. "Yellow pit. Seeds of clingstone peach commonly cultivated in this district; the flavor compares favorably with the flavor of those grown in the United States. The peach is indigenous in Persia, but so far as is known the Persians have never made a systematic effort to improve the quality of this fruit." (*Bader.*)

41273. "Red stone Seeds of clingstone peach commonly cultivated in this district." (*Bader.*)

41274. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**

(*Prunus persica* Stokes.)

From Amoy, China. Presented by Mr. Lester Maynard, American consul. Received September 30, 1915.

"Seeds of late-season peaches, such as are grown in this district. They blossom and form their fruit in the latter part of March and ripen at the end of June. The fruit is about the size of a duck's egg, and they are sweet, but tart. The skin is rose color, as is the fruit, and they are of the clingstone variety. They are known locally as *pear* peach." (*Maynard.*)

41275 to 41281.

From Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees, Ltd., Liverpool, England, at the request of Mr. A. K. Bulley. Received September 28, 1915. Quoted notes by Mr. Cooper.

41275. (Undetermined.)

"No. 3829. Shrubby bush (Rosaceæ) 5 feet through, little tufts of pink and white fibers hanging from spiny branchlets. Growing among sand and gravel in Paro district; altitude, 8,000 feet. Flowers in cold weather, November to February."

41276. (Undetermined.)

"No. 3961. A bush up to 5 feet, usually under light forest in sandy peaty soil, from the bark of which paper is made locally. Altitude 9,000 to 10,000 feet. Flowering in autumn, November."

Received as a species of Daphne, but the seeds do not appear to belong to that genus.

41277 to 41281. PRIMULA spp. Primulaceæ. **Primrose.**

41277 and 41278. PRIMULA spp.

41277. "No. 4008. *P. capitata* type in fruit at 12,000 feet. Smaller plants at 14,000 feet show hanging wide-mouthed blue flowers. In peaty meadow at fringe of Abies forest. Flowering in May and June."

41278. "No. 4082. Allied to *P. petiolaris*, but leaves and flower stems long to 18 inches, head often of 12 to 20 flowers. Growing in sodden leaf soil and gravel on a forest hillside under Acer and Abies. Flowering in May; only seen in fruit at an altitude of 11,000 feet."

41279. PRIMULA PETIOLARIS Wallich.

"No. 4129. With sessile inflorescence (à la *Wintsii*) in moist gravel and sandy leaf mold in shade of Abies forest at 11,000 feet. Flowering in May."

41280. PRIMULA OBTUSIFOLIA Royle.

"No. 4133. Flowers purple; in alpine peat meadows at 13,000 feet."

41281. PRIMULA sp.

"No. 4132. Same as 4008 [S. P. I. No. 41277] but at an altitude of 13,000 feet. In peat meadows with a 'meal' on leaves. No. 4008 had 'meal' (white) on under surface of leaves."

41282. CASSIA ANGUSTIFOLIA Vahl. Cæsalpiniaceæ.

From Poona, India. Presented by Mr. W. Burns, economic botanist, Agricultural College. Received July 29, 1915.

"Obtained from Mr. H. G. Sampson, deputy director of agriculture, southern division, Madras Presidency." (*Burns.*)

41283 and 41284. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

From Ollantaytambo, Peru. Presented by Mr. Ellwood C. Erdis, New Haven, Conn. Cuttings received September 21, 1915.

41283. "Spineless tuna; from 9,000 feet altitude at this place." (*Erdis.*)

41284. "A spiny tuna with yellow flowers; from 9,000 feet altitude at this place." (*Erdis.*)

41285 to 41288.

From Waverly, New Zealand. Presented by Mr. T. W. Lonsdale, manager, Moumahaki Experiment Farm, Department of Agriculture, Industries, and Commerce. Received September 30, 1915. Quoted notes by Mr. Lonsdale.

41285. BROMUS UNIOLOIDES (Willd.) H. B. K. Poaceæ. **Prairie grass.**

"Moumahaki prairie grass. The strongest and best known for providing winter feed here."

41286. DAUCUS CAROTA L. Apiaceæ. **Carrot.**

"Moumahaki matchless white carrot. Gave the best results here in 1915."

41287. TRIFOLIUM REPENS L. Fabaceæ. **White clover.**

"Moumahaki evergreen white clover. Selected for its winter growing habits."

41288. VICIA FABA L. Fabaceæ. **Broad bean.**

"Moumahaki selected horse bean. Seed produced near to the ground and plants of vigorous habit."

41289. ANNONA sp. Annonaceæ. **Anona.**

Plants grown from seed received from Mr. William J. Tutcher, superintendent, Botanical and Forestry Department, Hongkong, China, December, 1913.

41290. PITTOSPORUM CRASSIFOLIUM Solander. Pittosporaceæ.

From Auckland, New Zealand. Presented by Mr. H. H. Wright, Avondale Nurseries. Received September 30, 1915.

Evergreen shrub, 20 feet, good hedge plant. Leaves coriaceous, the under surface, as well as shoots and sepals, covered with close white hairs. Flowers in terminal umbels, often solitary, deep purple, nearly half an inch long. From the North Island of New Zealand, chiefly on the east coast. (Adapted from *Laing and Blackwell, Plants of New Zealand.*)

41291 to 41294. GOSSYPIUM spp. Malvaceæ. **Tree cotton.**

From Darwin, Northern Territory of Australia. Presented by Mr. S. A. Bailey, Agricultural Branch. Received September 30, 1915.

"From the plantation of Mr. W. B. Pruen, near Darwin. Plant 9 or 12 feet apart each way, according to climate. At the end of the second season remove the old wood annually from the Caravonica tree and ratoon the native sorts. Matures in two years." (*Bailey.*)

41291. Rough, *Caravonica.*

41292. Smooth, *Caravonica.*

41293. Native, interior.

41294. Native, coast.

41295 to 41314.

From Buenos Aires, Argentina. Presented by Mr. Benito J. Carrasco, director general, Botanic Garden. Received September 7, 1915.

41295. AESCHYNOMENE HYSTRIX Poir. Fabaceæ.

A leguminous (fabaceous) plant with odd-pinnate leaves; small linear or slightly oval leaflets, obtuse at apex and base; half arrow-shaped stipules; and short axillary racemes of bright yellow flowers.

41296. ASTRONIUM BALANSAE Engl. Anacardiaceæ.

Glabrous anacardiaceous tree with very hard wood; subcoriaceous leaves composed of four to five pairs of long petiolulate, oblique, lanceolate leaflets with sharply serrate margins; dense terminal panicles of very small flowers; and globose drupes. (Adapted from the original description, *Engler, Botanische Jahrbücher, vol. 1, p. 45, 1881.*)

"This is one of the most extensively utilized species of hardwood in the country. It is abundant, and is exported from the mountain regions as planks, sleepers, posts, etc." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41297. BELOPERONE PLUMBAGINIFOLIA (Jacq.) Nees. Acanthaceæ.

"Small, shrubby acanthaceous plant, 1 to 2 feet high, with long petiolate soft leaves and short spikes of rich purple flowers, one-half inch long. Found in South America from Brazil to Argentina." (*Wallich, Plantae Asiaticae Rariores, vol. 3, p. 102, 1832.*)

41298. CARICA QUERCIFOLIA (St. Hil.) Benth. and Hook. Papayaceæ.

A small, rapid-growing tree, native of Paraguay, with large palmately 3-lobed leaves and small fruits, which are said to contain a larger percentage of papain than those of *Carica papaya.*

41299. COLLIGUAJA INTEGERRIMA Gill. and Hook. Euphorbiaceæ.

Coliguay.

Small euphorbiaceous shrub with opposite or alternate, narrowly lanceolate, entire, somewhat rigid leaves borne only on the upper part of the branches; monœcious spikes of flowers borne on the ends of the branches, the lower flowers being pistillate, the upper staminate. The habit resembles that of a Stillingia. (Adapted from *Hooker, Botanical Miscellany, vol. 1, p. 140, 1830.*)

41300. SEBASTIANIA KLOTZSCHIANA BRACHYCLADA (Muell. Arg.) Pax and K. Hoffm. Euphorbiaceæ.

Euphorbiaceous shrub with slightly spiny, alternate branches and inconspicuous monœcious flowers. It is called *Blanquillo* by the people of Argentina where it is a native, and is regarded by them as being poisonous.

41301. FLOURENSIA CAMPESTRIS Griseb. Asteraceæ.

A glabrous, yellow-flowered shrub from Argentina, up to 6 feet in height, with oblong-lanceolate leaves. A composite (Asteraceæ) closely allied to the *tar-bush* (*F. cernua*) of the southwestern United States and somewhat resembling the sunflowers (*Helianthus* spp.) in the structure of the flowers.

41302. GUETTARDA URUGUENSIS Cham. and Schlecht. Rubiaceæ.

A small rubiaceous tree 15 to 20 feet high, with twisted branches; opposite membranaceous, lanate leaves of varied forms ranging from ovate or elliptic to cuneate-elliptic and lanceolate, always acute, often

41295 to 41314—Continued.

mucronate, about 3 inches long and 1 inch across; caducous petiolar stipules lanceolate triangular, acute; axillary, long pedunculate cymes of white flowers with salver-shaped 5-lobed corollas, smooth within, sericeous without, less than half an inch long, and three to four bony-seeded cylindrical ovoid drupes one-third of an inch in diameter. (Adapted from *Chamisso and Schlechtendal, Linnaea, vol. 4, p. 183, 1829.*)

41303. ALEGRIA DIVARICATA (Martius) Stuntz. Tiliaceæ. **Soto caballo.**
(*Luehea divaricata* Mart.)

Handsome tree 20 to 50 feet high with graceful ashy-tomentose branches, oblong, rarely elliptic or oblong-lanceolate leaves, 4 inches long and 2 inches broad; terminal paniculate inflorescences of rather large white to rose-colored flowers. Found along river banks in the forests of Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 12, part 3, p. 159, 1886.*)

41304. MABA sp. Diospyraceæ.

An ebenaceous tree with alternate, entire leaves, and small flowers almost sessile in their axils. Known as *Maba* in Argentina, where it is used for its timber.

Received as *Maba argentinensis* Speg., for which a place of publication has not yet been found.

41305. MYROXYLON SALZMANNI (Clos) Kuntze. Flacourtiaceæ.
(*Xylosma salzmanni* Eichl.) **Ira-poitá.**

A small spiny tree 10 to 15 feet in height, with somewhat variable leaves, usually ovate-oblong to ovate, more or less crenate-dentate, 2 to 4 inches long and 1 to 2 inches broad; and dicœcious inconspicuous greenish yellow flowers borne in umbellate fascicles. Native of Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 13, part 1, p. 448, 1871.*)

41306. PIPTADENIA RIGIDA Bentham. Mimosaceæ.

"Unarmed mimosaceous shrub or small tree, entirely glabrous or with the younger parts slightly pubescent; leaves composed of four to six pairs of many-paired linear falcate leaflets and axillary short spikes of small white flowers." (*Bentham*, in *Hooker's Journal of Botany, vol. 4, p. 338, 1842.*)

41307. PLAZIA ARGENTEA (Don) Kuntze. Asteraceæ.
(*Hyalis argentea* Don.)

A composite shrub from Argentina called *olivillo*. Reported by Tweedie to grow to the exclusion of almost everything else on the salt plains of northern Argentina.

41308. PTEROGYNE NITENS Tul. Cæsalpiniaceæ. **Viraro.**

A tall, stout, unarmed tree abundant in parts of Argentina and Brazil. It has pari-pinnate leaves, with usually alternate, lanceolate leaflets; and small flowers in short, loosely flowered, axillary clusters. (Adapted from *Engler and Prantl, Die Natürlichen Pflanzenfamilien, vol. 3, part 3, p. 130.*)

"The wood is very strong and resistant. It is used for the construction of carts, except for the spokes. It is considered an excellent wood in Misiones and is exported. In Salta it is also highly valued and is used in coach making." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41295 to 41314—Continued.

41309. RUPRECHTIA FAGIFOLIA Meissn. Polygonaceæ.
Duraznillo blanco.

"An abundant tree with smooth bark which renews itself annually, and which after becoming dry, but before falling, becomes wrinkled and gives the tree a peculiar and very characteristic appearance. Wood rosy, hard; trunk coarse, not utilized. A very handsome ornamental tree; in spring it is covered with yellow flowers which later become rosy. Their color resembles that of the peach flower; hence the name *Duraznillo.*" (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

41310. SCHINOPSIS LORENTZII (Griseb.) Engler. Anacardiaceæ.
(*Quebrachia lorentzii* Griseb.) **Quebracho colorado.**

A tree with compound leaves composed of 10 to 15 pairs of persistent, leathery leaflets, glabrous above. Highly prized for its hard and durable reddish colored timber. One of the most valuable trees in Argentina.

41311. SIDA BONARIENSIS Willd. Malvaceæ.

Shrubby plant with cordate, oblong leaves, deeply crenate, stellate-pubescent above, tomentose beneath; the capsule villous. Native of Argentina; called *Malvisco.*

41312. SOLANUM BONARIENSE L. Solanaceæ.

Tender evergreen shrub up to 10 feet high, with ovate-oblong, sinuate-repand leaves, long lateral racemes of large white flowers, and globose yellow berries. Native of Argentina, where it is called *Granadillo.* Said to have medicinal properties.

41313. VALLESIA GLABRA (Cav.) Link. Apocynaceæ. **Ancochi.**

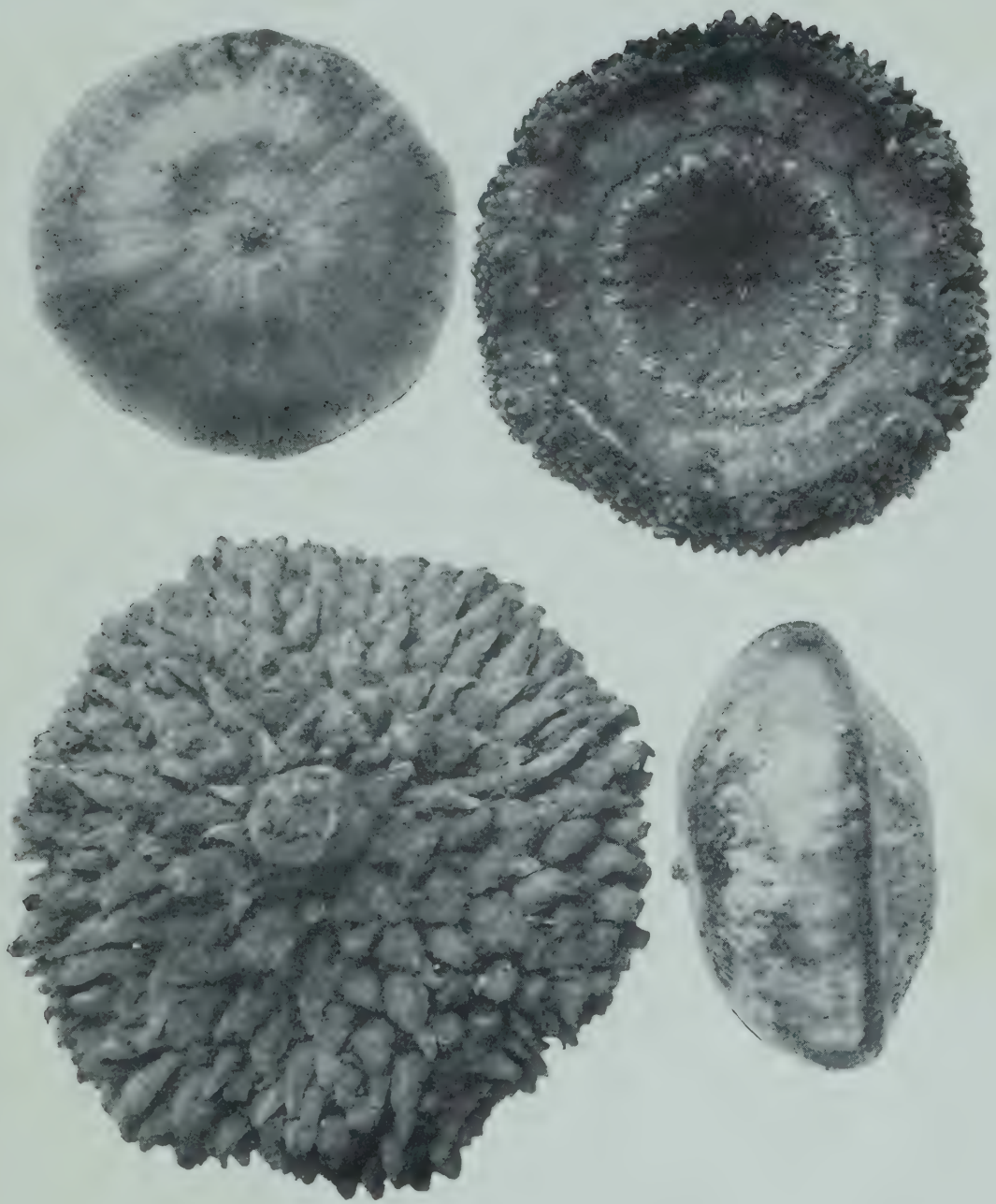
"A small, spineless tree with somewhat twisted branches; soft, yellow wood which is not utilized. It is abundant near rivers. Its fruit is white, resembling a pearl. The bark is rugose and soft like that of the *Cedrillo;* it is a poisonous plant, but in 1896 and in 1909 I ate the fruits without suffering any ill effects." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)

Found from Florida through tropical America to Chile and Argentina.

41314. VITEX MONTEVIDENSIS Cham. Verbenaceæ.

A small tree from Uruguay and Brazil 15 to 20 feet high with branches usually compressed and dilated at the nodes; ashy-gray, glabrous bark; seemingly opposite palmate leaves composed of five, rarely three, lanceolate to elliptic leaflets 4 to 6 inches long; and axillary cymes of slightly irregular flowers with nearly rotate 5-lobed corollas. (Adapted from the original description, *Linnaea, vol. 7, p. 373, 1832.*)

"The wood, of reddish color, somewhat striped, hard, is strong and much esteemed. As it resists moisture well it is much used for posts, etc.; and being easily split, it is used for shingles. The fruits yield a kind of oil; and the wood itself, even after it has become dry, exudes oil when placed on the ground, and seems to become green again." (*S. Venturi, Contribución al Conocimiento de los Arboles de la Argentina.*)



GIANT ACORNS OF A MEXICAN OAK (QUERCUS INSIGNIS, S. P. I. No. 39723).

A white oak which occurs in the vicinity of Huatusco, about midway down the flanks of Mount Orizaba in the State of Vera Cruz, Mexico, forming there trees 60 to 80 feet high, branching 30 or 40 feet from the ground; believed by Dr. Purpus to be capable of acclimatization in Florida, Porto Rico, and Hawaii. The acorns are edible. (Photographed by Mr. E. L. Crandall, Washington, D. C., May 21, 1918; natural size; P23880FS.)

NOTE OF CORRECTION.

In Inventory 42, Plate I, opposite p. 16, was printed a photograph supposed to represent acorns of S. P. I. No. 39723, *Quercus insignis* Martens and Galleotti. Dr. William Trelease has called our attention to the fact that these acorns are *Q. cyclobalanoides* Trelease. We here publish Plate XI, from a photograph of the true *Q. insignis*, with a corrected legend. The legend under Plate I in Inventory 42 should read:

"Acorns of *Quercus cyclobalanoides* Trelease, the Mexican ring-scaled white oak, closely related to *Q. insignis;* collected in the State of Chiapas, by Dr. C. A. Purpus. Photographed, natural size, by Mr. E. L. Crandall, Washington, D. C., March 14, 1914 (P13834FS). No S. P. I. number was assigned to these acorns."

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BY THE

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERI D FROM OCTOBER 1 TO DECEMBER 31, 1915 (NO. 45; NOS. 41315 TO 41684).

INTRODUCTORY STATEMENT.

Although this inventory chronicles the arrival of only 370 new plant immigrants, it describes some that are of unusual interest and deserving of special mention. It covers certain plants of the high Peruvian Andes collected by Mr. O. F. Cook while attached to the Yale University–National Geographic Society Expedition. These include a remarkable wild relative of the tomato (No. 41318), which has a pleasant, slightly acid flavor, resembling that of an apple, and remarkable keeping qualities which may make it of particular interest to tomato breeders; one of the Mutisias (No. 41317), a large trailing composite vine worthy of trial in our greenhouses for its beautiful orange to scarlet pendent flowers, which suggest thistles; a passion fruit (No. 41316), the pulp of which separates from the hard shell, making it possible to peel the shell away; the tara (*Caesalpina pectinata*, No. 41323), a spiny leguminous tree or shrub which may make a striking hedge plant in our Southwestern States, its bright scarlet pods contrasting with its deep polished-green leaves as holly berries do; the tasta (No. 41324), a fine-leaved shrubby Escallonia, which may make a desirable hedge plant as far north as San Francisco; the lengli (*Hesperomeles oblonga*, No. 41325), an attractive tree with evergreen leaves and brilliant red fruits, hanging on all winter like holly berries; the capuli cherry of Peru (*Prunus salicifolia*, No. 41328), from an altitude of 12,000 feet, which resembles a chokeberry but has a firm flesh of good texture and agreeable taste; a variety of the sweet cassava (*Manihot dulcis*, No. 41320), which species, according to Cook, is represented by varieties maturing at 6,000 feet on the eastern slopes of the Andes and in the cold cloudy coastal climate of the Pacific coast; a species of tree (*Datura sanguinea*, No. 41329), with green, orange, and scarlet flowers, which occurs where heavy frosts are encountered every night; the lucuma of Peru (No. 41332), a popular fruit with rich mealy

flesh, resembling a cooked sweet potato, and with a hardiness which presumably will enable it to be grown in California and Florida; a South American walnut (*Juglans* sp., No. 41334), of distinct value to plant breeders, the bark of which is used for dyeing wool the color of the famous vicuña ponchos; and a remarkable species of the papaya (No. 41339), which produces fruits that will keep for two weeks or more after they are ripe and which are as deliciously fragrant as a well-ripened muskmelon and of excellent flavor but tough texture. Although the quinoa (*Chenopodium quinoa*, No. 41340) has often been introduced into America and has nowhere yet found a home, it is important to get an opinion regarding this plant from a keen observer and thoroughly trained agricultural explorer. Mr. Cook reports that previous to the introduction of wheat and barley this cultivated pigweed was one of the two most widely grown crops of the remarkable Inca civilization, that it is pronounced by a Scotchman resident there to-day as being better than oatmeal for a breakfast food, and that it appears very vigorous and productive and may possibly be gathered and thrashed by machinery.

Among the introductions sent in by correspondents or collected by travelers, there are several unusual things covered by this inventory. To Rev. George Campbell, the American missionary who has sent in so many interesting plants from South China, we are indebted for a most remarkable dwarf peach (No. 41395), which is handled as a pot-grown tree in China and which he says comes true to seed. He reports that one small tree 15 inches high with a stem no larger than a lead pencil ripened five good-sized edible clingstone peaches. The behavior out of doors at Chico of a number of seedlings of this peach suggests the possibility of a dwarf race of peach trees of value as fruit producers and for plant breeding. Mr. Carlos Wercklé, of Costa Rica, sends seeds of the sansapote (*Licania platypus*, No. 41393), the most beautiful forest tree in Costa Rica, which grows to gigantic size, bears an edible fruit, and produces timber nearly as good as the Cedrela timber of Cuba. Mr. A. Rolloff, director of the Tiflis Botanic Garden, who has sent so many new hardy plants from the Caucasus, presents us with seeds of the beautiful sulphur-yellow peony (No. 41476), recently discovered near Lagodekhi in eastern central Caucasus by Mlokosewitsch, for whom it was named. *Caragana arborescens* has become almost a necessary hedge and shelterbelt plant on the Canadian Great Plains, and it is coming to be better appreciated in our own Northwest. A beautiful, striking, prostrate form (No. 41480) to which Mr. Norman M. Ross, of Indian Head, directed attention last year, and which he has since sent us,

can scarcely fail to be of value for dooryard planting in the coldest portions of our country.

It always gives a feeling of satisfaction to realize that a tree introduction has reached a stage where it is producing a supply of seed in this country. The Queensland nuts (No. 41472) sent in from Homestead, Fla., by Mrs. L. L. Bow were produced by a tree sent to her by this office in 1911. Its productiveness and the quality of the nuts indicate that this new nut tree, which furnishes a basis for a small industry in Australia, is a promising one for both Florida and California.

Collections of seven winter-wheat varieties (Nos. 41510 to 41516) from Baluchistan, presented by Mr. A. Howard, of the Indian Service, and of 18 varieties (Nos. 41342 to 41356 and 41682 to 41684) from Pusa, India, should yield something valuable for the wheat breeders.

The hybrids between the American chinkapin and the Japanese chestnut (Nos. 41357 to 41360), made by Dr. Walter Van Fleet, bear nuts which in size and sweetness should recommend them to the serious attention of nut growers.

The Mascarene grass (*Osterdamia tenuifolia*, No. 41509), which has been used so extensively by the Japanese for lawns, but which comes to us from the island of Guam, has already shown its remarkable lawn-making character in southern Florida, where lawns are most difficult to maintain.

A species of Rubus (No. 41676) from India, making a growth of 20 feet and said to be the most robust of the genus, together with five other species from the same section of the Himalayas, may have special interest for breeders, even though they may not do well generally.

Those Americans who have tried in vain to grow as a border plant the brilliant Calceolaria, so common in Great Britain, may be glad to test as a substitute the Australian Crotalaria (No. 41571), which Mr. James Pink, who sends it in, predicts will be highly successful in borders in dry situations.

The Pondoland cocos (*Jubaeopsis caffra*, No. 41484) will have a botanical interest to all palm lovers as the only members of the tribe to which the coconut belongs which occurs in Africa, all the others being inhabitants of the Western Hemisphere.

Chinese place and plant names in this inventory have been brought, so far as possible, into accord with the best authorities, the geographic names (except when fixed by decisions of the United States Geographic Board) being given in the form accepted by the Chinese Ministry of Communications Postal Guide. Many of the smaller vil-

lage names, however, are not listed therein, and in all such cases the location of the village is given with reference to the nearest town mentioned in that work.

The manuscript of this inventory was prepared by Miss May Riley, the botanical determinations of seeds introduced were made and the notes on geographic distribution compiled by Mr. H. C. Skeels, while the descriptive and botanical notes were arranged by the late Mr. S. C. Stuntz.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., May 31, 1918.

INVENTORY.

41315. LILIUM PHILIPPINENSE Baker. Liliaceæ. **Benguet lily.**

From Manila, Philippine Islands. Bulbs presented by Mr. A. Hernandez, acting Director of Agriculture. Received October 4, 1915.

"Grown at La Trinidad Experiment Station, Trinidad, Benguet, P. I." (*Hernandez.*)

A delicately fragrant lily from the Philippine Islands, with pure waxy white, usually solitary flowers, tinged green near the base, 6 to 9 inches long and 4 to 6 inches wide. It is best suited for pot culture in the Northern States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture.*)

On account of its narrow leaves it will probably not be of any great importance except possibly in breeding work.

41316 to 41341.

Collected by Mr. O. F. Cook, of the Bureau of Plant Industry, on the Yale University–National Geographic Society Expedition to Peru. Received October 5, 1915. Quoted notes by Mr. Cook, unless otherwise indicated.

41316. PASSIFLORA sp. Passifloraceæ. **Tumbo.**

"(No. 228. Tinta, Peru, April 16, 1915.) Seeds collected in the Vilcanote Valley, at an altitude of more than 10,000 feet. A large vine with deeply 3-parted leaves, very rugose and deeply veined above, cottony white below, petioles and young stems also with cottony pubescence; petals pale pink, slightly darker than the lobes of the calyx, the fringe bright blue, less than half as long as the petals, but more than a third as long, rising from a white fleshy ring that borders the mouth of the tube; fruit strongly pubescent when young, more thinly so when mature, becoming pale yellowish or speckled and tinged with dull purplish on the exposed side. On account of the texture, pubescence, and the colors the surface of the fruit has somewhat the appearance of a light-colored peach. The shape of the fruit is nearly globose, but the ends are distinctly flattened; length 5 cm., width 5.7 cm. The outer wall of the mature fruit separates readily from a soft white inner skin which adheres closely to the pulp mass and holds it together, so that the outside shell can be broken away without danger of losing the pulp or seeds, the pedicel serving as a convenient handle during the operation. The inner skin can then be pulled away or eaten with the pulp. The ready separation of the wall into the two layers may give this species an advantage as a table fruit, for it can be eaten, like a kid-glove orange, without wetting the fingers, or it can be brought to the table ready to eat, with the outer shell taken off, but the pedicel left as a handle. The pulp mass, in addition to being held together by the inner skin, is rather firm. The flavor of the pulp is excellent, very pleasantly acid, and perhaps more like a cherry than any other temperate fruit with which it might be compared. The seeds are also somewhat smaller than those of most of the species that are grown for their fruits. The vine is a very beauti-

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

ful climber and the flowers are magnificent, not so strikingly colored as some of the passion flowers, but a very attractive pink."

41317. MUTISIA sp. Asteraceæ.

"(No. 834. San Miguel and Torontoy, Peru, June 9, 1915.) Seeds of a large trailing vine with a magnificent flower. The rays attain a length of nearly 5 cm. and are recurved against the involucre, which is covered with long, recurved, channeled scales, appearing spinelike and suggesting a thistle, but not stiff or sharp. The flowers are pendent and have a stalk 6 to 10 inches long. The rays are orange at the base, passing through scarlet and scarlet red and then to deeper shades, finally discoloring to black. The anthers are dark brownish and the style yellow, tipped with red. The rays are of firm texture and evidently remain showy for a long time, several days at least. Probably would not thrive outside of a greenhouse unless in Florida or California."

41318. LYCOPERSICON sp. Solanaceæ. **Wild tomato.**

"(No. 1185. June 10, 1915.) Seeds of a wild tomato growing near a small watercourse between Ollantaytambo and Torontoy and about 1 league above the latter place, at an altitude of more than 8,000 feet, in a rather dry district, with cacti and other desert vegetation. Only one plant was found at the place where the fruit was obtained, though the species was noticed two or three times in other localities. The vine was large and woody, trailing over bushes 10 to 12 feet high. The foliage, flowers, and fruit have much the same form as those of the cultivated tomato. The flowers are of a bright yellow color, but the fruits remain green, even when the seeds are mature. Finally they become somewhat yellowish, but with no approach to the bright colors of the cultivated varieties. The fruit also lacks the characteristic odor and taste of the tomato, but has a pleasant, slightly acid flavor, more like that of the apple. Another difference is that the outer wall is much firmer in texture than in the cultivated tomato, and the keeping qualities are apparently very much better. Fruits collected on June 10 and brought to Ollantaytambo in a saddlebag remained apparently unchanged, with no signs of decay or withering, until July 20, and some of them were still fresh when they reached Washington in September.

"In addition to the botanical interest attaching to this plant as a wild relative of the tomato, there is the possibility of making use of it in hybridizing and breeding new varieties. If such a cross can be made, it may be expected to give a wide range of variation and yield new types of fruit adapted to special purposes, such as woody perennial varieties that can be trained over arbors like grapevines, or varieties with special flavors, greater firmness of flesh, and improved keeping qualities. An increase of hardiness might also be expected, in view of the fact that this species grows wild at a rather high altitude in a valley bordered by high mountains with perpetual snow fields. The nights are very cold, with frequent frosts during the winter season. The fruits are over an inch in diameter, several times as large as those of the red-fruited wild tomato found later at Santa Ana, from which the cultivated tomato appears to have been derived. The fruits are borne in large flat clusters on a dichotomously (?) branched inflorescence that becomes stiff and woody as the fruits mature. The Indians are said not to use the fruit, but the plant is supposed to have medicinal properties."

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

41319. RUBUS sp. Rosaceæ. **Raspberry.**

"(No. 1233. Panticalla Valley, Peru, July 18, 1915.) Seeds of a raspberry of possible interest to breeders on account of the extremely large size of the fruits, which attain a length of nearly an inch and a half and a diameter of more than an inch. The color and general appearance are much like our red raspberry, but there is a solid fleshy core, like a blackberry. The vine is a large and very vigorous climber, with fresh bright-green foliage, the stems and petioles being armed with rather scattering hooked spines. The flowers are pinkish purple."

41320. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ.
(*Manihot palmata* Muell. Arg.) **Sweet cassava.**

"(No. 1680. Santa Ana, Peru, July 6, 1915.) Dried fruits of the cassava plant, known in most Spanish-speaking countries as *yuca*, which is an important root crop in most parts of tropical America. In many regions cassava is a staple article of diet, as the potato is with us, and in some respects it is superior to the potato, notably in having a richer flavor. The flavor of the fresh cassava is entirely lacking in tapioca, which is the only product of cassava widely known in the United States. The cassava would be a valuable addition to the agriculture of the United States, and especially in the warmer parts of the country where the summer weather is too hot for the potato, but thus far it has remained confined to the warmest districts of the Gulf States, on account of the very long season required to mature the crop. The prospects of more general utilization of the cassava in the United States depend obviously on the possibility of securing varieties that will grow in a shorter season or with less heat. The behavior of cassava in Peru may be said at least to justify a renewed hope of securing varieties that can be raised more widely in the United States than any that have been available in the past. On the eastern slope of the Andes the cultivation of the sweet cassava extends to an altitude of 6,000 feet, and it is also grown along the Pacific coast in a climate that is cold and cloudy for much of the year. The Peruvian varieties should be tested in southern California, as well as in the Gulf and South Atlantic States."

41321. CANNA EDULIS Ker-Gawler. Cannaceæ. **Achira.**

"(No. 1732. Peru.) Seeds of a wild species growing in the Urubamba Valley between San Miguel and Torontoy at altitudes of 6,000 to 8,000 feet. The plant is said to be the same in every respect as the cultivated *achira* of this district, except that it does not have the enlarged fleshy rootstocks. It usually grows in rather densely wooded situations and behaves in all respects like a wild plant. The plant is larger and the flowers are smaller than those of another species of Canna that grows farther down the valley at Santa Ana, and the color and shape of the flowers are also different. Unlike the Santa Ana species, the petals have little of the bright red or scarlet, but more subdued yellowish or pinkish shades not easily identified with any of the Ridgway color standards. The middle of the petals is nearly orange-chrome, but most of the neighboring colors are represented, with the margins nearly scarlet, or with various pinkish shades, or toned down into such colors as apricot-orange and the neighboring shades, rufous and carnelian red. The calyx inclines to pinkish, and the fruit spines are tinged with Pompeiian red."

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

41322. MANIHOT DULCIS (Gesner) Baillon. Euphorbiaceæ. **Sweet cassava.**
(*Manihot palmata* Muell. Arg.)

"(No. 1768. Dried fruits from San Miguel, Peru, July 10, 1915.)"

For description, see No. 1680 (S. P. I. No. 41320).

41323. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*Caesalpinia tinctoria* Domb.)

"(No. 1795. Seeds from Peru.) A tall, upright, spiny shrub or small tree, often planted for hedges, especially in the district around the town of Urubamba, but very abundant in the wild state farther down the Urubamba Valley, between Ollantaytambo and Torontoy, at altitudes of 8,000 to 10,000 feet. Here it grows under much the same conditions as the *molle* or pepper tree, though going into somewhat lower and drier situations. Yet the *tara* does not extend into the parts of the valley that are occupied by tropical types of vegetation, as at San Miguel, nor were any seen in the region of Santa Ana. The habit of growth and general appearance of the *tara* are striking, the trunk or trunks being strictly upright, with a few spreading branches near the top. The largest trees attain a height of 25 to 30 feet, with trunks 6 to 8 inches in diameter. The foliage is deep green in color, with the leaflets smooth and polished on the upper surface. The greenish yellow flowers in cylindrical open spikes are not very conspicuous, but the pods are produced in large clusters, and the exposed surfaces show a bright scarlet for a long time before maturing. The color affords a very attractive contrast to the leaves, and from a distance the effect is the same as though the trees were producing clusters of red flowers. In addition to the possibility of using the *tara* as an ornamental, it might have value as a hedge plant or windbreak, especially in the drier, warmer parts of the Southwestern States. The tendency of many hedge plants to spread out laterally and occupy too much ground is not shared by the *tara*, for all the shoots grow nearly upright, making a very close and effective hedge, the bark being studded with short spines. The spines may afford an objection to the use of the *tara* as an ornamental in some situations, but they will add to its value as a hedge plant. A well-grown hedge of *tara* keeps out cattle, pigs, or goats, as well as human intruders. The growth of the young plants is said to be very rapid, the wood being rather soft and not durable. New shoots are formed readily after cutting back, but there are no sprouts from the roots. No information could be secured regarding the feasibility of propagating from cuttings. The hedges about Urubamba are said to be grown from seedlings.

"A further consideration is that the pods of the *tara* might be found to have economic value for tanning or dyeing, like the *divi-divi* and other species of Caesalpinia. In former years it was customary in Peru to make ink of the pods by grinding them and adding a little sugar and verba buena to give luster. The same preparation was used for dyeing black. The ink was said to be of good quality and continued in use in the district of Ollantaytambo until recent years, when supplies of imported ink were available. In the market in Lima *tara* pods are a regular article of trade and are said to be used for dyeing, tanning leather, and making ink.

"The immature seeds of the *tara* contain, underneath the skin, a layer of fleshy opalescent material, with a rather pleasant, slightly sweetish taste, which is considered edible, like the arillus of the seeds of Inga and

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

other leguminous trees; but in the *tara* the small size of the seeds makes it difficult to extract the edible material, which is also rather tough and tasteless.

"A few trees of *tara* or a related species were seen about Lima, but they were much less upright than those about Urubamba. If the trees should behave in this manner in California it would be much less desirable for the purposes considered above. The *tara* about Lima, however, may be a different variety. It was noticed that the pods offered in the market were broader than those of the trees of the interior valleys."

For an illustration of the tara, see Plate I.

41324. ESCALLONIA sp. Escalloniaceæ. **Tasta.**

"(No. 1827. Seeds from Pinasniocj, Peru, July 14, 1915.) A fine-leaved tree, comparable to the boxwood in foliage, but with horizontal branches and a more open habit of growth, which often produces an artistic effect like some of the dwarfed Chinese evergreens. The appearance is also somewhat similar to that of the *chachacoma* (*Escallonia resinosa*, S. P. I. No. 41326), but the foliage is much finer and of a dark and more shining green. Like the *chachacoma*, the tree will endure cutting back to any extent, and the new crown soon takes a graceful rounded shape. This may render the *tasta* very useful for ornamental planting in situations where space is limited, and it should also serve well as a hedge plant. Old trees have deep-red heartwood of the same texture and appearance as the wood of *chachacoma*, and are said to be used in the same way. The form of the fruits also suggests affinity with that tree, and the habit of growth is similar, but the flowers are solitary instead of clustered. The color of the flowers is said to be white, as in *chachacoma*. The leaves of young vigorous shoots are much larger than those of mature branches and are distinctly dentate. Like *chachacoma* the tree may be rooted from cuttings and layered branches. It ascends to higher elevations than *chachacoma* and may be expected to have greater resistance to cold, but less resistance to heat. It may thrive along the California coast as far north as San Francisco and might become popular as an ornamental or hedge plant."

41325. HESPEROMELES OBLONGA Lindley. Malaceæ. **Lengli.**

"(No. 1874. Dried fruits from Pinasniocj, Peru, July 14, 1915.) A tree growing at altitudes of 10,000 to 12,000 feet, found in the valleys of the two streams tributary to the Urubamba River, on the stream that enters at Ollantaytambo and the other the stream that comes down from the Panticalla Pass a few miles below Ollantaytambo. On the other side of the pass in the upper part of the Lucumayo Valley the *lengli* appears to be absent. In unfavorable places where the trees remain stunted they have an appearance somewhat like our thorn-apple or hawthorn, but in some of the sheltered ravines and reforested terraces where the conditions are more favorable the *lengli* trees attain a height of 30 to 40 feet, with trunks 1 to 2 feet in diameter having a very attractive appearance. The foliage is very fine, the leaves being of a very regular elliptical shape with slightly dentate margins. The upper surface is of a fresh deep-green color with neatly impressed veins, while the lower surface has a warm reddish brown tomentum, affording a very pleasing contrast. The fruit clusters give a festive appearance like holly, the mature berries being deeply and richly colored. They begin by changing from green through various shades of pink to

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

scarlet red and then pass on through the darker shades of red, becoming eventually almost black. The berries are distinctly flattened instead of round and have the appearance of very small apples. They hang on the trees for a long time, probably all through the winter, with the effect of the Christmas holly. A botanical peculiarity, perhaps of this species, is that the lowest branch of the fruit cluster is usually subtended by a very much reduced, oval, sharp-pointed leaf or bract, but is like the other leaves in color, texture, and persistence. The small leaf adds a little touch to the appearance of a twig with its cluster of berries. This tree might prove attractive for ornamental planting along the California coast or wherever it will grow. In view of the high altitude where the tree is native it may be expected to stand cold weather, if not actual frost."

For an illustration of the lengli, see Plate II.

41326. ESCALLONIA RESINOSA (R. and P.) Persoon. Escalloniaceæ. **Chachacoma.**

"(No. 1886. Seeds from Ollantaytambo, Peru, July 14, 1915.) A handsome tree, bearing clusters of white flowers. It is common in the valleys about Ollantaytambo at altitudes of 9,000 to 11,000 feet. In the lower valleys, where the climate is dry, the *chachacoma* grows intermingled with cacti and other desert vegetation and seldom attains a height of more than 12 to 15 feet. In the upper valleys, where the climate is cooler and the supply of moisture is ample, the *chachacoma* trees grow to much larger size, often attaining a height of 40 to 50 feet and a diameter of 2 to 4 feet. The largest trees were seen in the valley below Panticalla Pass, on the south side, but none were found on the north side, in the region of Yanamachi."

For an illustration of the chachacoma, see Plate III.

41327. CITHAREXYLUM sp. Verbenaceæ.

"(No. 1888. Dried fruits from Pinasniocj, Peru, July 17, 1915.) A tree or shrub with small yellowish green leaves and slender, square, angular, green branches. Grows in the dry lower valleys as a bush, but in favorable situations attains a diameter of over a foot. The general appearance is somewhat like box when the foliage is close, as in the dry valley between Torontoy and Ollantaytambo. It might be expected to grow in the same places as the California pepper tree (*Schinus molle*) and would serve better than that tree as a hedge or windbreak. It stands severe cutting back and apparently springs up rapidly. The mature berries are red. Those collected were from trees about a league below Pinasniocj at an altitude of about 10,000 feet."

41328. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Capuli.**

"(No. 1913. Seeds from Ollantaytambo, Peru, July 19, 1915.) A tree very common throughout the Urubamba and Vilcanota Valleys at altitudes of 12,000 feet and under. The lower limit of the *capuli* in the Urubamba Valley is near Torontoy at an altitude of about 8,000 feet. The flowers and fruits are borne in clusters, and the general appearance is much like the chokecherries of the United States, but the fruit is unlike the chokecherry in having a thick, firm flesh and an agreeable taste. Though not highly flavored, it is pleasant and juicy and of good texture and is sold in quantities in the markets of Cuzco and other towns of the plateau region. It is the only kind of cherry that is grown in quantities in this region. The ripe fruit begins to appear on the market in Novem-

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

ber and continues until April, coming probably from different altitudes. The size is that of a rather small cherry and the color a deep reddish purple, becoming nearly black with maturity. The leaves, stems, and bark are strongly charged with prussic acid and are very bitter to the taste. The trees are usually 20 to 30 feet high, but often of large size, 40 feet or over, with trunks 2 feet in diameter. Many are found in a wild or half-wild state, quite independent of cultivation. This was observed particularly in the neighborhood of Sicuani at an elevation of about 12,000 feet. Nevertheless, it is not certain that the species is a native of Peru. At Lima the same name, *capuli*, is applied to an altogether different type, a small plant of the genus Physalis, related to the tomato, but with the fruits small and inclosed in a large papery calyx like the so-called strawberry tomato, known in some parts of the United States. As the capuli tree appears to be a healthy, vigorous, rapid-growing type, it may be worthy of a trial along the Pacific coast. The possibility of using it as a stock for other cherries or for the production of desirable hybrids is also worth considering, but the species is not closely related to our cultivated cherries and may need to be looked upon as a distinct type to be improved through selection rather than by hybridization."

41329. DATURA SANGUINEA Ruiz and Pavon. Solanaceæ.

Puca campacho.

"(No. 1915. Peru, July 14, 1915.) Seeds from above Pinasniocj, Panticalla Pass, at an altitude of about 12,000 feet. A large treelike species, somewhat smaller than *D. arborea*, with smaller leaves and more narrowly tubular flowers. The corolla tube is green at the base, orange yellow in the middle, and scarlet at the mouth. In addition to these striking differences, the species should be much more hardy than *D. arborea*, which appears in Peru to be a native of the lower tropical valleys, while *D. sanguinea* extends to the high altitudes where heavy frosts are encountered every night."

41330. LUPINUS CRUCKSHANKSII Hooker. Fabaceæ. **Tarhui.**

"(No. 1919. Seeds from Ollantaytambo, Peru, July 20, 1915.) Apparently a native species, commonly cultivated at altitudes of 9,000 to 11,000 feet. The pods are very thick and fleshy, with distinct but not prominent irregular veins; the surface glaucous and somewhat pubescent, but not very densely so. Flowers very handsome, the banner erect, blue at the sides, then white, but yellow in the lower half of the middle, the lower petals deeply blue, covering the whitish keel. Flowers usually in whorls of five, four, or three. Leaves naked above, sparsely hairy beneath, glaucous. Seeds pure white. Said not to yield very well. After being ground into meal this has to be soaked several days in running water to extract the bitter taste; considered a delicacy, notwithstanding the difficulty of preparation."

41331. PASSIFLORA sp. Passifloraceæ. **Tumbo.**

"(No. 1922. Seeds from Ollantaytambo, Peru, July 19, 1915.) Leaves somewhat like that of the Tinta species, but upper surface much smoother and under surface not so cottony. Flowers without fringe, very similar to those from Tinta, except for the absence of tentacles, involucre with bracts united, and fruit with yellow pulp, attaining a length of 3 cm. and a width of 4 cm. The skin surrounding the pulp very thin and tough, surface of fruit strongly pubescent, with simple

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

erect hairs, but surface of calyx tube naked. The pulp has a rather strong, distinctly acid taste, quite different from most other edible Passifloras. It might not find favor with the American public, but is distinctly worth trying. There is a decided tang, something like that of a tomato. The plant is found commonly growing by roadsides around Ollantaytambo, in places altogether uncultivated, and may be considered a native of this district."

41332. LUCUMA OBOVATA H. B. K. Sapotaceæ. **Lucuma.**

"(No. 1925. Seeds from Ollantaytambo, Peru, June 10, 1915.) The *lucuma* is a popular fruit tree in Peru. It is closely related botanically to the *sapote* and *injerto* of Central America, but the quality of the fruit is entirely different. The flesh is very rich and mealy, more like a cooked sweet potato than like the related fruits. The tree is also of a very compact habit of growth, with the rather small obovate leaves clustered closely near the ends of the branches. Another difference is that the *lucuma* grows and produces fruit at a much higher altitude than the sapote, attaining about 9,500 feet at Ollantaytambo, so that there would seem to be a much better chance for the *lucuma* in California or Florida than for the sapote."

41333. CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*Caesalpinia tinctoria* Domb.)

"(No. 2046. From Peru, July 17, 1915.) Seed from Urubamba Valley, between Torontoy and Ollantaytambo. Like S. P. I. No. 41323, but from a different tree."

41334. JUGLANS sp. Juglandaceæ. **Nogal.**

"(No. 2047. Seeds from Ollantaytambo, Peru, July 22, 1915.) A native walnut cultivated sparingly at Ollantaytambo and in the valley above and below. Its chief use is to furnish a dye to give sheep's wool the brown color of the high-priced vicuña ponchos. The leaves and bark of the tree are used for dyeing, the coloring material being extracted by beating and boiling. The nuts are as large as English or Persian walnuts, but the shell is much thicker. The tree is rather small and slender, with large graceful leaves, reminding one of the sumac or Ailanthus. Of interest for breeding purposes or for ornamental planting along the Pacific coast or in Florida. Probably a native of the valleys of the eastern slopes of the Andes."

41335. CHENOPODIUM HASTATUM Philippi. Chenopodiaceæ. **Cañihua.**

"(No. 2148. Seeds from Cuzco, Peru, July 20, 1915.) A second cultivated species of Chenopodium, grown only at very high altitudes. Seen only in the valley on either side of the Pass of La Raya. Both the plant and the seeds are much smaller than the *quinoa*. *Cañihua* is usually planted after potatoes, with no attempt at other cultivation. The seeds are toasted and ground into meal. The cañihua is used chiefly as a travel ration and by shepherds who go out with their flocks on the Andean pastures."

For an illustration of the cañihua, see Plate IV.

41336. CUCURBITA sp. Cucurbitaceæ. **Zapallo macri.**

"(No. 2049. Seeds from Lima, Peru, August 16, 1915.) Very large fruits, attaining 2 feet in diameter, globose-ovate, fusiform, or depressed. Surface either light gray, deeper bluish gray, or yellowish, smooth or with shallow furrows or with scattered corky lines."

THE TARA, A NEW PLANT FOR HEDGES AND WINDBREAKS, FROM PERU (CAESALPINIA PECTINATA CAV.), S. P. I. NO. 41323.

An upright shrub or small tree, often planted for hedges in parts of Peru. The habit of growth of the tara peculiarly fits it for a hedge plant or windbreak. The trunk or trunks are upright, with a few spreading branches near the top, and the bark is studded with short spines. Tara pods are a regular article of trade in the market of Lima, and are said to be used for dyeing, tanning leather, and making ink. This plant should prove valuable in many situations in the South. (Photographed, natural size, by the Yale University-National Geographic Society Expedition, July, 1915; P17974CA.)

THE LENGLI, AN INTERESTING ORNAMENTAL TREE OF PERU (HESPEROMELES OBLONGA LINDLEY), S. P. I. NO. 41325.

This tree, commonly known as the lengli, grows in the mountains of Peru at altitudes of 10,000 to 12,000 feet. Where conditions are favorable, the tree attains a height of 30 to 40 feet, with a trunk diameter of 1 to 2 feet. The oval leaves are green above and reddish brown tomentose beneath. The fruit is richly colored, being pink when young and passing all the stages of red until almost black when ripe. The mature fruit hangs on the tree for a long time. The tree may be expected to stand cool weather and even frost. (Photographed, slightly reduced, by the Yale University-National Geographic Society Expedition, July, 1915; P18045CA.)

THE CHACHACOMA OF PERU (ESCALLONIA RESINOSA (R. AND P.) PERSOON), S. P. I. NO. 41326.

A handsome tree, producing clusters of white flowers for a long period during the winter months. It thrives in the high valleys of Peru at altitudes of 9,000 to 11,000 feet. Here it attains a height of 40 to 50 feet and a diameter of 2 to 4 feet. In the lower valleys, where the climate is dry, this tree grows intermingled with cacti and other desert vegetation, but it seldom attains there a height of over 15 feet. It has not heretofore been grown in the United States. (Photographed, natural size, by the Yale University-National Geographic Society Expedition, July, 1915; P17890CA.)

THE CAÑIHUA, A CULTIVATED FOOD PLANT FROM THE HIGH ANDES (CHENOPODIUM HASTATUM PHILIPPI), S. P. I. No. 41335.

The shepherds who live in the higher altitudes of the Peruvian Andes use the seeds of this plant for food. The seeds are toasted and then ground into meal and used principally as a travel ration, quantities of it being taken by the shepherds when they go out with their flocks on the Andean pastures. The plant and seed are much smaller than the better known quinoa. This species is grown only at very high altitudes. It was seen by Mr. O. F. Cook only near the Pass of La Raya. The photograph shows seedlings (much reduced) in different stages of development. (Photographed by the Yale University-National Geographic Society Expedition, July, 1915; P17786CA.)

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

41337. CUCURBITA sp. Cucurbitaceæ. **Zapallo abin.**

"(No. 2050. Seeds from Lima, Peru, August 16, 1915.) A medium-sized squash of the same general form as the *loche*, but much larger and distinctly grooved. Rough with coarse warts, which are sometimes confluent, but usually distinct. Color on the outside, deep dull salmon yellow, in places finely mottled with olive green; on the inside, deep yellow. Flesh much thicker at the neck than at the large end, but neck not solid."

The *loche* is a squash of the general form of the ordinary crookneck, but with straight neck. No seeds of this plant were received.

41338. SOLANUM sp. Solanaceæ. **Sacapari.**

"(No. 2052. Dried fruits from Copacabana, Bolivia, August 8, 1915.) A hardy species, with bluish violet flowers, apparently the same as that obtained near Puquiura, on the border of the Anta Plain in Peru, between Huaroconda and Cuzco, at an altitude of about 12,000 feet. At Copacabana it blossomed profusely in midwinter, when no other plants were flowering. Shrub not so large as the Puquiura one, 3 to 5 feet, but woody. To keep in good condition it would probably need pruning or cutting back to the ground occasionally, but would probably live for many years, and could be used as a hedge or screen. The fruits turn a transparent reddish yellow at maturity, but are black when dry. How much frost it will endure is not known, but a plant that will endure freezing every night in the blossoming season should be of interest throughout the Southwest. At Copacabana the name *sacapari* was given for this plant."

41339. CARICA sp. Papayaceæ.

"(No. 2053. July 22, 1915.) Seeds of a *papaya* tree of nearly the same size and general appearance as the familiar type, but with the fruits much smaller and more deeply grooved. The flesh is inferior in texture to that of the ordinary *papaya*, but greatly superior in odor and taste, and probably also in keeping qualities. A thoroughly ripened fruit was kept for two weeks under ordinary living-room conditions and still showed no sign of decay. The tree has a more rounded and compact leaf crown than *Carica papaya*, the leaves having much shorter petioles. Another apparent difference is that the fruits are not so closely confined to the leafy portion of the trunk, but are borne well down on the stem. Fruit 9 to 11 cm. long by 5.5 to 7 cm. wide, with flesh 1 cm. or less in thickness, rather tough and elastic, though becoming somewhat softened and turning yellowish with maturity. The odor is very delicious, like a high-grade, well-ripened muskmelon, and the flavor also is excellent, the deficiency lying in the texture of the flesh. The seeds have the taste of capers. As the species appears to be a rather close relative of *Carica papaya*, crossing seems likely to succeed, and if the good flavor and the keeping qualities of the Peruvian species can be combined with the large size and abundant fruiting of *C. papaya* a really acceptable melon tree would result. The *papaya*, improved by the addition of a more attractive flavor and better keeping qualities, might become an important commercial fruit, for it thrives in southern Florida, and commercial production on a larger scale would be feasible there and perhaps also in the warm districts in southern California. From the standpoint of ease of production few plants are more promising than

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

the *papaya*. The trees grow with great rapidity and are extremely prolific. It is known that superior varieties can be propagated asexually, both by budding and by rooted cuttings."

See Circular No. 119, Bureau of Plant Industry, for methods of propagation.

41340. CHENOPODIUM QUINOA Willd. Chenopodiaceæ. **Quinoa.**

"(No. 2154. Cuzco, Peru, July 27, 1915.) Seeds of a large pigweed extensively cultivated in the high plateaus of Peru. The seeds are eaten prepared in various ways, but the principal use is for making a kind of *chicha*, or native beer. Before the introduction of barley and wheat from Spain, *quinoa* and *cañihua* were probably the only seed crops grown in the more elevated parts of Peru. Potatoes are always the principal crop, with *quinoa* and *cañihua* next, following with the other tubers, *oca*, *anyu*, and *ullucu*. *Quinoa* presents many color variations in the plants as well as in the seeds, especially in the direction of reds and purples. The colored seeds are used almost exclusively for making *chicha*, the white seeds being preferred for eating. A possibility of utilizing the *quinoa* in the United States lies in its use as a breakfast food. Some pronounce it as good as oatmeal, and one resident Scotchman even insisted that it was better. From a crop standpoint, too, the plant appears rather promising, being very vigorous and productive. It is of erect habit, has a strong central stalk, and forms compact heads, heavy with seed. There is no reason why it should not be gathered and thrashed by machinery."

For an illustration of the quinoa, see Plate V.

41341. CYPHOMANDRA CALYCINA Sendt. Solanaceæ. **Tree tomato.**

"(No. 2058. Seeds from Ollantaytambo, Peru, July 29, 1915.) The plant attains a height of 4 to 5 feet with a single erect central stalk and spreading horizontal branches like a small, flat-topped tree. The leaves are entirely different from those of the tomato, being simple, entire, and broadly oval. The surface of the leaves, as well as the petioles and branches, is covered with a very short, minute, soft, velvety pubescence. The method of branching is peculiar, as there appear to be two leaves on some of the joints, those above the inflorescence, while the other internodes have a single leaf. The buds are tinged with purplish pink, but the mature flowers are nearly white. The fruits have a pointed oval or fusiform shape and are borne in pendent clusters from near the ends of the branches. The largest fruits found in the market of Cuzco measured 7 by 5 cm. The largest diameter is somewhat below the middle of the fruit, the end being more pointed than the base. The colors are Brazil red on the more exposed surfaces and cadmium orange on the lighter parts, with many intermediate shades either in solid color or finely mottled. The skin is thicker and tougher than that of the tomato and the outer layer of flesh firmer. The placenta is large and fleshy, completely filling the interior of the fruit, the seeds being confined mostly to a narrow zone between the outer walls and the placenta. The freshly cut fruit has a pronounced odor, as strong or stronger than that of the tomato, but of a somewhat different quality. The taste, while much nearer to that of the tomato than to any other fruit, is distinctly different. Some might find it more pleasant and others not. In any event the fruit is distinctly edible, and the plant laden with its fruits is curious enough to be grown for its own sake and to allow the possibilities of the fruit to be tested. The habits

41316 to 41341—Continued. (Quoted notes by Mr. O. F. Cook.)

of the plant in Peru indicate that it will grow in a colder climate than the tomato. The natives plant their seed beds (huambales) in July or August and transplant in December, the plants making a very rapid growth during the wet summer months from December to March and ripening their crop in the fall. In the United States the growing period could probably be much shortened, on account of our warmer weather in the spring. The Indians wet the earth with boiling water before planting the seed, to kill or drive away insects that might otherwise attack the young seedlings. They also enrich the soil with sheep or guinea-pig manure. In Urubamba Valley this plant has no other name than *tomate*, which it shares with the true tomato, but this causes no confusion, for the Cyphomandra is confined to the higher elevations and Lycopersicon to the lower valleys."

41342 to 41356. TRITICUM spp. Poaceæ. **Wheat.**

From Pusa, India. Presented by Mr. Bernard Coventry, Imperial Economic Botanist, Pusa, India, through the superintendent, Agricultural College Farm, Poona, India. Seed received October 4, 1915.

41342 to 41344. TRITICUM DURUM Desf.

41342. *Hansia Broach.*

41343. *Potia Nadiad.*

41344. *Shet Parner.*

41345 to 41350. TRITICUM AESTIVUM L. (*Triticum vulgare* Vill.)

41345. *Mundi of Ludhiana.*

41346. *Paman of Sirsa.*

41347. *Daudkhani*, or *Daudakhani.*

41348. *Popatia Nadiad.*

41349. *Siok.*

41350. *Deshi Athani.*

41351 and 41352. TRITICUM DURUM Desf.

41351. *Kopergaon Baxi*, or *Kopergum Baxi.*

41352. *Black-awned Athni.*

41353. TRITICUM AESTIVUM L. (*Triticum vulgare* Vill.)

Lal of Batala or *Lal of Batalu.*

41354. TRITICUM DURUM Desf.

Bansi of Baleghat, or *Bansi of Buleghat.*

41355 and 41356. TRITICUM AESTIVUM L. (*Triticum vulgare* Vill.)

41355. *Australian.*

41356. *Pivla pote.*

41357 to 41360. CASTANEA PUMILA × CRENATA. Fagaceæ. **Hybrid chestnut.**

Produced by Dr. Walter Van Fleet at Little Silver, N. J. Quoted notes by Dr. Van Fleet.

Plants growing at the Plant Introduction Field Station, Chico, Cal.

"A hybrid between the American chinkapin and the Japanese chestnut. Bears at one to three years from seed. A good producer and quite resistant to the chestnut-bark fungus. Nuts large, of fair quality, with rather hard shells."

41357. "The nuts are somewhat larger than ordinary American chestnuts and somewhat sweeter."

41457 to 41360—Con. (Quoted notes by Dr. Walter Van Fleet.)

41358. "Much the same as S. P. I. No. 41357; possibly slightly better in flavor and tenderness of flesh."

41359. "Trees of this number bear much larger nuts than those of either of the two preceding. The nuts are much larger than the American type, about the size of a Spanish chestnut, and are very sweet."

41360. "Tree 26. These are nuts of high quality, much the same in size and flavor as S. P. I. No. 41359."

41361 to 41371. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Horticulture Experiment Station. Received October 9, 1915.

Numbered from 1 to 10; also one package of mixed numbers.

41372 to 41383.

From Poona, Bombay, India. Cuttings presented by Mr. W. Burns, Economic Botanist, Agricultural College. Received October 9, 1915.

41372 to 41376. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

41372. OPUNTIA sp.

41373. OPUNTIA DILLENII (Ker-Gawler) Haworth.

41374 and 41375. OPUNTIA spp.

41376. OPUNTIA ELATIOR Miller.

41377. NOPALEA COCHENILLIFERA (L.) Salm-Dyck. Cactaceæ. **Cochineal cactus.**

"A cactus with fleshy, obovate, unarmed branches, native of Mexico, but cultivated on a large scale, especially in the Canary Islands, for cochineal breeding. This is not the only plant which is suited for this purpose; there are several other kinds, characterized by unarmed branches, used for the same purpose; the reason for the choice of this is obvious, because the workmen are not injured by spines. Cochineal, the well-known, splendid, very brilliant color, is produced from the bodies of the scale insect (*Coccus cacti*), killed by means of steam. Since the developmen of the aniline-dye industry this branch of agriculture, which was extremely profitable to the above islands, has gone down and become practically unremunerative." (*Engler and Prantl, Pflanzenfamilien.*)

41378 to 41383. OPUNTIA spp. Cactaceæ. **Prickly-pear.**

41378. OPUNTIA FILIPENDULA Engelmann.

41379 to 41381. OPUNTIA spp.

41382. OPUNTIA DECUMANA (Willd.) Haworth.

41383. OPUNTIA FICUS-INDICA (L.) Miller.

41384. ANNONA sp. Annonaceæ.

Seeds from Cajabon, Guatemala. Presented by Mr. Walter F. Curley. Received October 7, 1915.

"*Tzumuy Pac*, so called here in the Indian language. I had never seen them until some Indians brought them in; they say they are quite common on the mountain of Chaal near the British Honduras border. They are quite small, yellow outside with corrugated skin, and resemble the larger fruit *sincuya* (*Annona purpurea*). There is very little inside to eat, but that is of fine flavor. The seeds are very abundant. Ripens in the district of Cajabon, Guatemala, in September." (*Curley.*)

41385. FERONIELLA LUCIDA (Scheff.) Swingle. Rutaceæ.
(*Feronia lucida* Scheff.)

Seeds from Buitenzorg, Java. Presented by the director of the Botanic Garden. Received October 2, 1915.

"*Karista batu.* Small spiny tree, native to Java; leaves odd-pinnate, 3 to 6 paired; leaflets oval or obovate, coriaceous, shiny above, margins entire or slightly crenulate, obtuse or emarginate at the apex; petioles pubescent, the terminal leaflet sessile; rachis pubescent, articulated; flowers perfect or by abortion male, fragrant, white, rather large; sepals small, linear, pubescent; petals pointed oval; stamens four times as many as the petals; fruit globose, 2½ to 2¾ inches in diameter; seeds small, with a thin hard testa, immersed in the glutinous pulp. The pulp is sometimes eaten in Java, like that of the wood-apple (*Feronia limonia*). It grows wild in the drier parts of Java, and has been introduced into the United States, where it is being tested by the Department of Agriculture as a stock for citrus fruits." (*W. T. Swingle.* In *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1220.*)

41386 to 41388. CITRUS spp. Rutaceæ.

Seeds from Manila, Philippine Islands. Presented by Mr. P. J. Wester, Lamao Experiment Station. Received October 4, 1915.

41386. CITRUS MEDICA L. **Citron.**

"A small primitive citron." (*Wester.*)

41387. CITRUS SOUTHWICKII Wester. **Limao.**

"(No. 2049.) *Limao.* A thorny tree, with dense head and drooping branches, attaining a height of 6 meters. The *limao*, though rare, is not uncommon in Bohol, where it is cultivated, and it has also been collected by the writer in Baganga, Mindanao. The flowers appear late in April and during the early part of May, with the fruit ripening in January and February. A few fruits nearly full grown were collected in May. This plant has flowered irregularly from May to December. The fruit is not eaten, but is used in washing by the Boholanos. It is of no economic importance. The tree is evidently quite drought resistant and succeeds well in very scanty soil underlain with limestone. The *limao* belongs in that group of the citrus fruits having free filaments, the most conspicuous characters being the compact growth of the crown, the dark-green, thick, and distinct leaves, the almost sessile stigma, and the attractive, oblate, regular-shaped fruit with its many locules, exceeding in number those in any other citrus fruit known to the writer. This species has been named in honor of Mr. E. F. Southwick. For a full description, see The Philippine Agricultural Review, first quarter, 1915. Fruits scarcely edible; plant may make a good stock." (*Wester.*)

41388. CITRUS WEBBERII MONTANA Wester. **Cabugao.**

"(No. 2266.) *Cabugao.* Seeds from plant from which this species was described. Fruit makes a fair ade." (*Wester.*)

"A shrubby tree with slender branches and small, weak spines, sometimes absent; young growth green; leaves 8.5 to 14 cm. long, 3 to 3.5 cm. broad, ovate to ovate-oblong, crenate, dark green above, shining, base broadly acute to rounded, apex blunt pointed, usually retuse; petiole 24 to 38 mm. long, with narrow wing margin, in large leaves sometimes 17 mm. broad; flowers not seen; fruit roundish oblate, about 45 mm. across, somewhat corrugate, 8-loculed. The general character of the plant and fruit indicates that the *cabugao* is a form of the *alsem* (*Citrus webberii*)." (*Wester The Philippine Agricultural Review, vol. 8, p. 14, first quarter, 1915.*)

41389 and 41390. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Smyrna, Turkey. Presented by Mr. George Horton, American consul general. Received October 9, 1915.

41389. "Freestone peaches, grown in the Vilayet of Aidin." (*Horton.*)

41390. "Clingstone peach, grown in the Vilayet of Aidin." (*Horton.*)

41391. HOMOIOCELTIS ASPERA (Thunb.) Blume. Ulmaceæ.
(*Aphananthe aspera* Planch.)

Seeds from Augusta, Ga. Presented by P. J. Berckmans Co. Received October 5, 1915.

An ornamental ulmaceous tree up to 60 feet high, having the appearance of a hackberry (*Celtis occidentalis*), with the slender branches forming a dense head. Leaves ovate to ovate-oblong, broadly wedge shaped at the base, tapering at the apex, 2 to 3½ inches long, serrate, with straight veins ending in the teeth. (This last character easily distinguishes this tree from *Celtis sinensis*, with which it has often been confused.) The greenish flowers and small black drupes are inconspicuous. Not hardy north of Georgia. (Adapted from *Rehder.* In *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 308.*)

41392. UVARIA CALAMISTRATA Hance. Annonaceæ.

Seeds from Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received October 11, 1915.

"A native of Hongkong. This is a strong-growing creeper which produces an edible fruit of a very pleasant, slightly acid taste." (*Tutcher.*)

41393. LICANIA PLATYPUS (Hemsl.) Fritsch. Rosaceæ. **Sansapote.**

Seeds from San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received October 14, 1915.

"Inferior to the species from the Atlantic coast, as it has little flesh; large fruits still sell even here in Orotina, 1½ leagues from where it grows wild, for 5 cents apiece, and smaller ones two for 5 cents. One of the most beautiful of all forest trees; of gigantic size; timber nearly as good as Cedrela." (*Wercklé.*)

41394. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.**
(*Aegle marmelos* Correa.)

Seeds from Lahore, India. Presented by the superintendent Government Agriculture-Horticulture Gardens. Received October 14, 1915.

See S. P. I. Nos. 38664, 41002, and 41133 for previous introductions.

41395. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Kiayingchow, Swatow, China. Presented by Rev. George Campbell, through Mr. George C. Hanson, American consul, Swatow, China. Received October 11, 1915.

"Peach pits from a curious little tree grown here only in pots as a house plant. The leaves are like other peach leaves, but its manner of growth is quite different. This particular tree is now just 15 inches high and had five full-sized peaches, somewhat smaller than American ones. I broke off two or three other fruits when quite small. They are borne on the main trunk on stems about a quarter of an inch long and make one think of papayas. The

lowest was 6 inches from the earth of the pot and the highest 8 inches, so the five were closely crowded together. The trunk at this point is little, if any, larger than a lead pencil. The fruit is of good color, as Chinese peaches go, and taste better than any others I have eaten in China. The flesh is white and it clings to the pit. The fruit hangs on the tree a very long time and is quite ornamental. The blossoms are quite showy, too. The Chinese say it comes true from the pits. I picked the last one yesterday, and the first was ripe a month ago. The ordinary peaches here are very poor—not fit to eat unless cooked." (*Campbell.*)

For an illustration of this peach, see Plate VI.

41396 to 41400. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received October 14, 1915. Quoted notes by Mr. Hurst.

"The peach tree of Spain is said to be of Persian origin and its numerous varieties as found here to-day may be divided into four classes—the common peach, or *Albérchigo*, the fruit of which has a yellow and red skin; the *Abridor*, the fruit of which has white, tender flesh; the *Pare*, the fruit of which is fine and succulent, and the *Bruñón*, the fruit of which has a hard flesh and strong, tenacious skin. From these four kinds 44 varieties have been developed. Those most cultivated here are divided into two groups, those planted in the spring and those planted in the fall. The spring peaches, which ripen in June and July, are known as *temprano*, or early, the varieties of which found chiefly here are *Magdalena Rojo*, *De Malta*, *Canciller*, and *Valenciano*. Seeds of the fall peaches known as *tardio*, or late, can not be had at present in any of the peach stores of Barcelona.

"Spanish peach trees are planted in well-fertilized soil, the depth varying according to the quality and nature thereof and local weather conditions. A piece of bone is placed at the bottom of each hole made in the soil before planting. From the experience of local horticulturists it has been found that the use of a mixed vegetable and animal fertilizer is best adapted to the growth of the young peach trees. The earth around the planted tree should be worked frequently. The planting of peach trees too close to garden or other walls is found to be highly prejudicial to their development, and in transplanting they should be placed not nearer than 1 foot away. During the first three or four years much attention is devoted to the pruning of Spanish peach trees, in order to develop symmetric growth and enable the sap to distribute itself proportionately in all parts. Argillaceous or very cretaceous soil is not found advantageous to peach culture here, as in such soil the roots can not extend freely. If the soil be too damp, the fruit becomes insipid and matures late. Where the soil is sandy the fruit produced is more aromatic, but less juicy. The soil preferred for peach culture in Spain is a turfy mellow loam of a calcareous nature. The seed of the cultivated peach is very rarely planted here, as the growth of the tree is so slow that four years are required to produce fruit. When, however, it is planted by the nurseryman, it is usually done in the month of March. The Spanish horticulturist prefers to plant a wild-peach seed which grows rapidly and gives at the end of a year a stock upon which a cultivated peach bud may be grafted. The budding is generally done in August, but may also be performed in May or September. The incision is made from 4 to 6 inches above the ground. Preferable here to grafting on the wild-peach stock is grafting the cultivated peach on the almond or cherry

stock, which is stronger and not so susceptible to climatic changes. Fruit is obtained sooner and the life of the tree lengthened, because the peach tree does not usually live more than 8 to 10 years here. For this reason the almond is preferred to the cherry, although both are adapted to this purpose, as they grow rapidly and are long lived."

41396. "No. 1. Wild peach."

41397. "No. 2. *Magdalena Rojo.* This peach is the fruit of a vigorous tree which produces abundantly. The peaches are large, the skin is highly colored, while the flesh is white streaked with red. It is sweet and very fragrant and the stone is easily separated. This peach matures by the end of August."

41398. "No. 3. *De Malta.* This peach grows abundantly on a strong tree, is of medium size with white flesh, and matures by the middle of August."

41399. "No. 4. *Canciller.* This peach is large and of fine appearance. Its flesh is firm, and it ripens by the end of August."

41400. "No. 5. *Valenciano.* This variety is a medium-sized fruit, with reddish tinged flesh, which grows on a strong tree that produces abundantly."

41401. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yangtaw.**

Seeds from Yencheng, Kiangsu, China. Presented by Rev. Hugh W. White, American Presbyterian Mission, South. Received October 14, 1915.

See S. P. I. Nos. 21781, 30196, and 33431 for previous introductions and descriptions.

41402. TRITICUM DURUM Desf. Poaceæ. **Durum wheat.**

Seed from Buenos Aires, Argentina. Presented by the Ministerio de Agricultura. Received October 2, 1915.

"Commonly known as *Candeal*, a name which commercially covers all durum wheats grown in this country. Although we have no division of winter and spring wheats, we would classify this particular variety under the second heading." (*Sr. Guillermo Ancizar.*)

41403 to 41417.

Seeds from Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received October 14, 1915. Quoted notes by Mr. Cooper.

41403. SWERTIA sp. Gentianaceæ.

"No. 4157. Only seen in fruit, scarce, growing in moist sand and gravel at an altitude of 12,000 feet on a bare hillside."

41404. PRIMULA sp. Primulaceæ. **Primrose.**

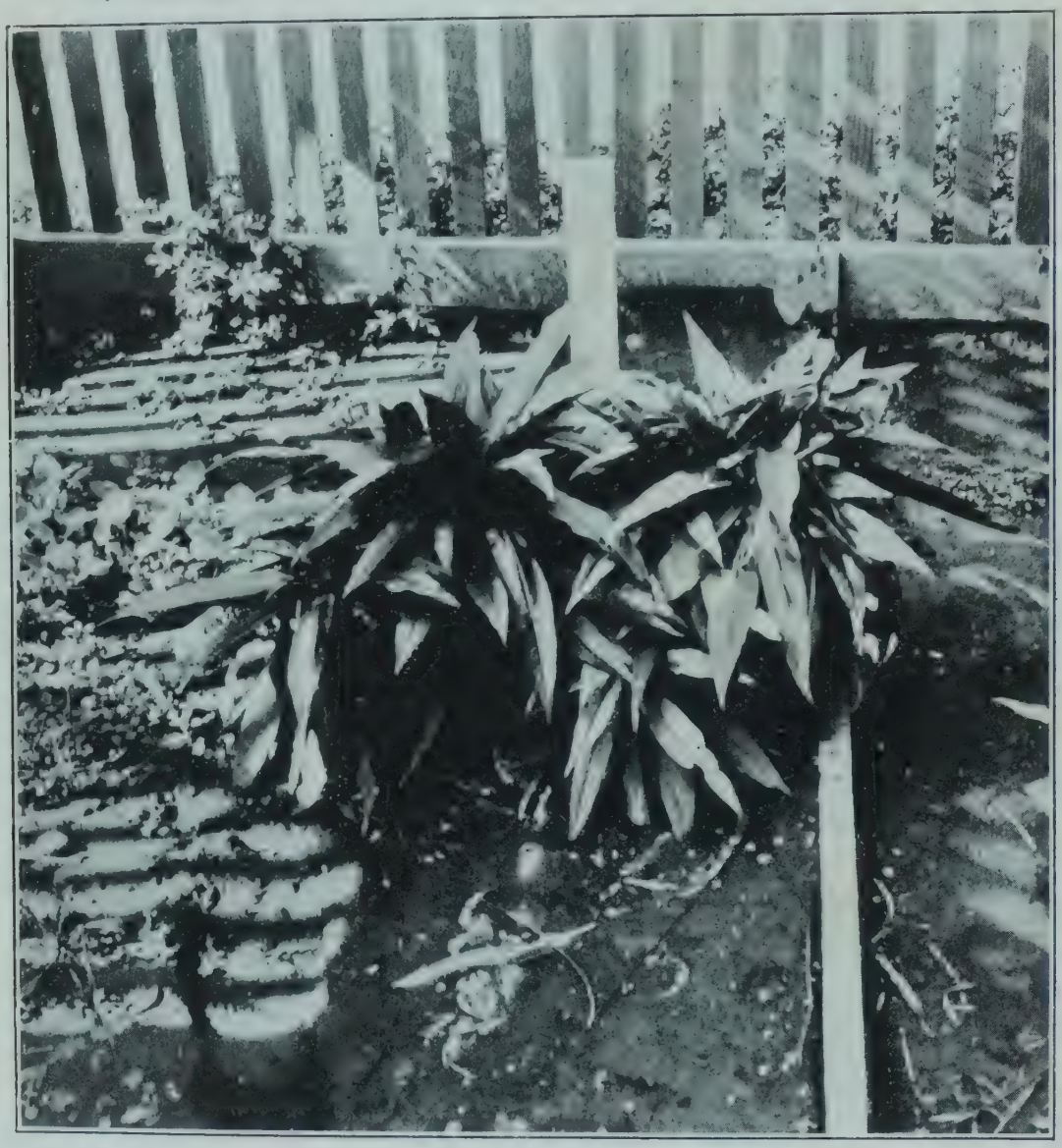
"No. 4164. Preferring moist sand on exposed hillside or peat marsh under Abies forest at altitudes of 10,000 to 12,000 feet. Leaves glabrous, reticulate. Inflorescence of superposed umbels, most variable, from a head of three flowers to three umbels. Mixed seed from all sorts of plants. Flowers not seen, but suspected to be small, yellowish."

41405. HYDRANGEA sp. (?) Hydrangeaceæ.

"No. 4165. Bush under Acer forest at an altitude of 10,000 feet. Four feet high with showy bright-blue bracts on large heads."

THE QUINOA, AN IMPORTANT "GRAIN" PLANT OF THE ANDES (CHENOPODIUM QUINOA WILLD.), S. P. I. No. 41340.

This is one of the most useful plants in the mountain regions of Peru and Bolivia, the extremely small seeds of the white variety being cooked with potatoes to make a staple dish among the lower classes. Dark-colored seeds are used almost entirely for making chicha, or native beer. Before using, it is necessary to wash the seeds thoroughly in order to eradicate a bitter flavor which they possess. The value of this plant in the United States lies in its possibilities as a breakfast food. (Photographed, natural size, by the Yale University-National Geographic Society Expedition; P17780CA.)



A CHINESE DWARF PEACH FOR PLANT BREEDERS (AMYGDALUS PERSICA), S. P. I. No. 41395.

Although dwarf peaches such as the Dwarf Orleans have long been known and little use made of them, a new dwarf from China, the home of the peach, may not be without interest, particularly to breeders. This variety, sent in by Rev. George Campbell, of Kiayingchow, near Swatow, produced seven fruits when only 15 inches high. They were white clingstones of a good quality and quite ornamental, and were borne close to the trunk, which was about the size of a lead pencil. It is said to come true to seed. (Photographed by Mr. Peter Bisset in 1916 from seed planted at Chico, Cal., in October, 1915; P20612FS.)

41403 to 41417—Continued. (Quoted notes by Mr. R. E. Cooper.)

41406. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4166. Only seen in fruit, but allied to if not *Primula obtusifolia;* preferring peaty soil under shade of Abies forest, along stream edges at altitudes of 12,000 to 13,000 feet."

41407. IRIS sp. Iridaceæ. **Iris.**

"No. 4190. Growing under oak forest at an altitude of 8,000 feet, only seen in fruit and suspected of being only half hardy, but growing in dry situations on slopes that are snowed under in winter. May prove all right."

41408. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"No. 4213. Growing under rhododendrons at altitudes of 10,000 to 11,000 feet, in moss, on rocks, trees, etc. Not seen in flower. Inflorescence stalked."

41409. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"No. 4214. Growing in similar situations as S. P. I. No. 41408 and differing only in the sessile inflorescence *a la Primula winteri.* Flowers not seen."

41410. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4217. Suspected of being *Primula whitei* W. W. Smith, growing under rhododendron scrub at an altitude of 10,000 feet in moss on bowlders by stream. Never in actual swampy peat by water. Flowers dark blue, yellow eye, in a head often of 12 to 20 flowers."

41411. PRIMULA MOLLIS Nutt. Primulaceæ. **Primrose.**

"No. 4227. Growing in sodden leaf soil in undergrowth of Elatostema on slope facing north at an altitude of 7,000 feet. Not hardy. Flowers not seen."

41412. PRIMULA OBTUSIFOLIA Royle. (?) Primulaceæ. **Primrose.**

"No. 4270. Var. *lutea.* Flowers yellow with golden eye, harsh scented, growing in profusion in peaty alpine meadows at an altitude of 14,000 feet."

41413. TAMARIX sp. Tamaricaceæ. **Tamarisk.**

"No. 4283. Scrubby plant with spike of heather-colored flowers, growing on gravel by a stream in the bed of a glacial valley at an altitude of 12,000 feet. Plants 6 inches to 1 foot high, in masses; fruits woolly."

41414. MECONOPSIS sp. Papaveraceæ.

"No. 4293. Allied to *Meconopsis simplicifolia;* only seen in fruit among dwarf rhododendrons at an altitude of 13,000 feet. Fruit peculiarly round, differing in this from usual long fruits of *Meconopsis simplicifolia.*"

41415. PINGUICULA sp. Pinguiculaceæ. **Butterwort.**

"No. 4311. Only seen in fruit, growing in moist peat by a stream in an alpine meadow at an altitude of 12,000 feet."

41416. PRIMULA sp. Primulaceæ. **Primrose.**

"No. 4330. Same as S. P. I. No. 41404, but seed selected from plants with only two or three tiers of fruits."

41417. BRYOCARPUM HIMALAICUM Hook. f. and Thoms. Primulaceæ.

"No. 4332. Flowers yellow, solitary, growing in moss, etc., under Abies forest at an altitude of 11,000 feet."

41418. OCOTEA sp. Lauraceæ.

Seeds from San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received October 9, 1915.

41419. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Naples, Italy. Presented by Mr. Jay White, American consul. Received October 19, 1915.

"Seeds of a variety of clingstone peach known as the *Pesca-Cotogna*, and locally as the *Percoca*. The peach of this variety is a large, hard, yellow fruit, all of which characteristics are suggested by its name, which is literally the 'peach-quince.'" (*White.*)

41420. PROTEA ARGENTEA L. Proteaceæ. **Silver tree.**
(*Leucadendron argenteum* R. Br.)

Seeds from Lawang, Java. Presented by Mr. M. Buysman, Botanic Garden. Received October 18, 1915.

"The *Silver* tree of South Africa, the leaves of which plant are used for various purposes and contain protexein, used in cases of malaria." (*Buysman.*)

"*Wittcboom*, a beautiful tree, native only in the immediate neighborhood of Cape Town. It is a small tree, up to 50 feet in height and 12 to 18 inches in diameter, with verticillate branches and white silky foliage which render its name appropriate and make the tree visible from a distance. Leaves widely lanceolate, 3 to 7 inches long, softly coriaceous, entire, acute. The soft, silky white leaves are now an article of commerce, being salable as curios, bookmarks, mats, fancy articles, etc., especially as when dried they take writing, painting, etc., and are then sold with texts or names inscribed or small scenes depicted. An export trade in these exists, as also in leaves for everlasting bouquets. The tree seldom attains maturity, on account of the constantly recurring fires, but where seeding is allowed these fires appear to assist germination and are followed by dense regrowth which would not otherwise appear. The limited distribution of this tree and its great abundance over that area where it has practical possession are very remarkable. In cultivation elsewhere there is little difficulty in securing germination, and if it does not damp off during the early stages it may continue to grow up to cone-bearing stage in 10 to 15 years, but seldom attains the size or vigor it has on Table Mountain, and nowhere has it shown any tendency to become naturalized." (*Sim, The Forests and Forest Flora of Cape Colony, p. 294.*)

41421 to 41423. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Shanghai, China. Presented by Mr. C. E. Gauss, American consul. Received October 16, 1915. Quoted notes by Mr. Gauss.

"Peaches are grown in the Ziccawei district of Shanghai and are of two general types, viz, the round peach and the flat peach. It is said that the peaches sold in Shanghai must necessarily come from within a radius of about 20 miles, due to the fact that there are no cold-storage facilities in China. Nevertheless peaches grown in Chefoo, Hangchow, and Ningpo are to be found on the Shanghai market. These, however, are said to be picked while green and allowed to ripen during the period of transportation."

41421 to 41423—Continued. (Quoted notes by Mr. C. E. Gauss.)

41421. "*Mi t'ao*, meaning 'sweet peach,' is round in shape, as is also the seed. Its appearance is not very nice, as it has many blemishes, but it tastes very sweet and is more expensive than *Pien t'ao* [S. P. I. No. 41422]."

41422. "*Pien t'ao*, meaning 'flat peach.' This peach is larger in size and looks much better than the *Mi t'ao* [S. P. I. No. 41421], but does not taste as sweet." A sample of the seed shows that it is the ordinary peach and not the flat variety.

41423. (No notes.)

41424 and 41425.

Seeds from Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received October 18, 1915.

41424. CUCURBITA PEPO L. Cucurbitaceæ. **Japanese squash.**

Chirimen. A round, orange-red, deeply scalloped squash of good flavor.

41425. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. Amygdalaceæ. (*Prunus sargentii* Rehder.) **Sargent's cherry.**

Yama zakura, from Hokkaido.

41426. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**

(*Sechium edule* Swartz.)

Fruits from San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. J. E. Van der Laat, director, Department of Agriculture. Received October 21, 1915.

"*Fiberless cocoros.* Very small, entirely coreless, and fiberless. I do not know whether the seeds of all the fruits are without testa, but the only one that I could examine was so; simply the cotyledons in a very small cavity in the center, without a shell." (*Wercklé.*)

41427. CORYLUS COLURNA L. Betulaceæ. **Turkish hazel.**

Seeds from Rochester, N. Y. Presented by Mr. Richard E. Horsey, Highland Park, at the request of Mr. C. A. Reed, of the Bureau of Plant Industry. Received October 19, 1915.

"*Constantinople* hazel. This hazel is the one which grows to be a large tree. One of the specimens in the park at Rochester measured 58 inches in circumference 1 foot above the ground." (*C. A. Reed.*)

"A tree up to 80 feet high, with a trunk sometimes 7 feet in girth, covered with pale scaling bark; leaves 2½ to 6 inches long, 2 to 4½ inches wide; broadly heart shaped, coarsely double toothed or almost lobed; fruits in clusters of three or more, the husks 1½ inches wide, with narrow-pointed fringed lobes 1 inch long; nuts one-half to five-eighths of an inch in diameter. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 401.*)

See S. P. I. No. 2212 for previous introduction.

41428. OPUNTIA NIGRICANS Haworth. Cactaceæ. **Prickly-pear.**

From Sydney, New South Wales. Cuttings presented by Mr. J. H. Maiden, director, Botanical Gardens. Received October 22, 1915. No. 144.

41429. MERATIA PRAECOX (L.) Rehder and Wilson. Calycanthaceæ. (*Chimonanthus fragrans* Lindl.)

Seeds from China. Presented by Mr. N. Gist Gee, Soochow University, through Mr. R. Rathbun, United States National Museum. Received October 19, 1915.

"Chinese *La mei hua*, rather rare. Make good flowering plants." (*Gist Gee.*)

"A deciduous shrub, naturally about 8 feet high, and of compact, bushy habit, but growing considerably higher on walls. Leaves lanceolate, 2 to 5 inches long, dark lustrous green. Flowers exceedingly fragrant, produced at various times between November and March according to the weather, but in ordinary seasons at their best in December against a wall; they are solitary on very short stalks at the joints of the previous summer's shoots, three-fourths to 1 inch across, the sepals and outer petals of an almost transparent yellowish green, the inner petals smaller and purplish. Seeds produced in a stalked gourd-shaped structure 1½ inches long, to the apex of which the stamens remain attached." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 337.*)

41430. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung tree.**

From Pineville, La. Seeds presented by Mr. William Hammond, superintendent, Alexandria National Cemetery. Received October 19, 1915.

"This seed came from the largest tree on the grounds, situated immediately in front of the lodge (west gate), and as there is and has been a flower bed around its base that has been irrigated regularly I attribute its larger size to that, although the water would not penetrate deeply." (*Hammond.*)

41431. BACCAUREA SAPIDA (Roxb.) Muell. Arg. Euphorbiaceæ.

Seeds from Rangoon, Burma, India. Presented by Rev. William H. S. Hascall.

"*Kan-a-so-thi* or *Picrardia*." An evergreen tree, native of the Malay Archipelago, 40 to 50 feet high, with alternate, rather membranous leaves 4 to 8 inches long; inconspicuous dioecious flowers in racemes, and yellow, slightly hairy fruits from three-fourths to 1 inch long. The bark is one of the chief mordants employed in using cotton dyes in India. (Adapted from *Hooker, Flora of British India*, and *Watt, Commercial Products of India.*)

41432 to 41443.

Seeds from Kamerunga, via Cairns, Australia. Presented by Mr. J. A. Hamilton. Received October 18, 1915. Quoted notes by Mr. Hamilton, except as otherwise indicated.

41432. ALBIZZIA ODORATISSIMA (L. f.) Bentham. Mimosaceæ.

See S. P. I. Nos. 38996 and 39103 for previous introductions and description.

41433. ANNONA MURICATA L. Annonaceæ. **Soursop.**

See S. P. I. Nos. 32302 and 35285 for previous introductions and descriptions.

41434. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

"Native bean. It is not edible so far as I know. The flowers are sweetly scented and come out singly. It might cross with the *Mauritius* bean and make a good cover crop, for it seems to stand drought and heat well."

41432 to 41443—Contd. (Quoted notes by Mr. J. A. Hamilton.)

"The seeds are eaten by the blacks after cooking, as they are poisonous in the raw state. Some shipwrecked sailors in northwestern Australia were poisoned by them." (*Forrest.* In *Maiden, Useful Native Plants of Australia.*)

41435. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"*New Era* papaya."

41436. CITRUS sp. Rutaceæ. **Orange.**

"*Kamerunga seedling* orange; A 1, very sweet; in fact, has a minimum of acid."

41437. DIOSCOREA sp. Dioscoreaceæ. **Yam.**

"Seeds of native yam; they are wild *kaikai* (native food), and no attempt has ever been made to cultivate them."

41438. FICUS BENJAMINA L. Moraceæ. **Weeping fig.**

See S. P. I. No. 18734 for previous introduction and description.

41439. LYCOPODIUM sp. Lycopodiaceæ. **Club moss.**

Spores.

41440. MUSA HILLII F. Mueller. Musaceæ. **Wild banana.**

"The fruit is not edible, being full of seeds, but as the flowers evidently produce pollen, they might be useful to carry out experiments in hybridization. The plants are prolific enough, there being about 200 fruits on the bunch this seed came from."

41441. PLATYCERIUM GRANDE J. Smith. Polypodiaceæ. **Fern.**

"The glory of the genus, however, is *Platycerium grande.* The barren fronds are exceptionally large, rounded and wavy margined at the base, deeply cut above, forming an erect or arching background to the pendent fertile fronds, which fork more times and have much narrower segments than the barren fronds. Unfortunately this is the only species that does not produce suckers at the roots, by which all the others are easily propagated. It alone must be raised from spores, a long and anxious process." (*L. H. Bailey, Cyclopedia of American Horticulture, vol. 3, p. 1369.*)

Spores.

41442. RUBUS sp. Rosaceæ. **Wild raspberry.**

"Wild raspberry. Likes moist situations. Growing near a spring in decomposed, yellowish red, sandy shale, latitude 17° 30′ S., 100 feet above sea level."

41443. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. **Indian jujube.**
(*Ziziphus jujuba* Lam., not Miller.)

"*Tag bush,* or *Chinese-apple.* Rather ornamental if trained as a standard. Very good for a hedge."

"The Indian jujube. Lisboa observes that it is one of the commonest fruit trees of the villages of western India. A moderate-sized deciduous tree, 'distinctly wild in the forests of the Siwaliks and sub-Himalayan tracts of the Punjab and United Provinces, and also in the Deccan and in Upper Burma and Ceylon in dry forests. Elsewhere mostly cultivated or run wild.'" (*Gamble, A Manual of Indian Timbers.*)

"The bark is said to be used for tanning in northern India, Bombay, Madras, and Burma. In Chota Nagpur it is similarly employed, but

41432 to 41443—Continued.

along with the fruit. Occasionally it is thrown into indigo vats to aid in precipitating the fecula. Hooper states that a sample of bark from Madras gave 4.1 per cent of tannin, and a sample of thick root examined at Dehra Dun gave 2.6 per cent, while some thin roots afforded 9.3 per cent. Most parts of the tree are employed in native medicine. The fruit of the wild *ber*, which ripens in the cold weather—the cultivated one almost in any season—resembles the crab apple in flavour and appearance and is much eaten, as well as that of most species, by the poorer classes; in fact, in times of scarcity these fruits are especially prized. By cultivation it is greatly improved both in size and flavour, and there is great variety among the cultivated forms. According to Marshall Woodrow, 'the best are elliptical, 2 inches in length by 1 in thickness, and are propagated by inarching or budding on seedlings of the common sort.' The unripe fruit is pickled; the ripe pulp is dried, mixed with salt and tamarinds, to form a condiment, or is made into chutnies. The kernels are also eaten, and the leaves constitute a useful fodder for cattle and goats. The wood is hard and reddish in colour, weighing on an average 48 pounds per cubic foot. It is largely employed in ordinary constructive work and has been recommended for furniture. It is also said to make excellent charcoal." (*Watt, Commercial Products of India, p. 1143.*)

41444 and 41445.

Seeds from Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Gardens. Received by Mr. W. T. Swingle, October 15, 1915.

41444. ATALANTIA CEYLANICA (Arn.) Oliver. Rutaceæ.

A much-branched spiny shrub or small tree native to Ceylon and India, where it is known as *yakinaran* or *peykurundu*. Chiefly of interest for trial as a stock, since its large seeds would be likely to produce vigorous seedlings. The dry fruit makes it unpromising for breeding purposes. (Adapted from *Swingle.* In *Bailey, Standard Cyclopedia of Horticulture.*)

41445. PLEIOSPERMIUM ALATUM (Wight and Arnott) Swingle. Rutaceæ. (*Limonia alata* Wight and Arnott.)

A small tree, common in southern India and Ceylon, especially in the dry regions; known as *tumpat-kurundu*. The wood is hard and close grained, much like that of *Chalcas exotica*. Of possible value for stocks. (Adapted from *Swingle.* In *Bailey, Standard Cyclopedia of Horticulture.*)

41446. BERBERIS ANGULOSA Wallich. Berberidaceæ. **Barberry.**

Seeds from Kew, England. Presented by the director, Royal Botanic Gardens. Received October 22, 1915.

A deciduous Himalayan barberry with clustered dark-green leaves, unusually large flowers, and large palatable berries.

See S. P. I. Nos. 33016 and 40143 for previous introductions.

41447 and 41448.

Seeds from Kamerunga, via Cairns, Queensland. Presented by Mr. J. A. Hamilton. Received October 18, 1915. Quoted notes by Mr. Hamilton.

41447 and 41448—Continued.

41447. CAESALPINIA CORIARIA (Jacquin) Willd. Cæsalpiniaceæ. **Divi-divi.**

"*Divi-divi.* Ornamental; the pods used for tanning."

See S. P. I. Nos. 26171 and 35896 for previous introductions.

41448. GOSSYPIUM sp. Malvaceæ. **Caravonica cotton.**

"*Caravonica* cotton, originated by Dr. Tomates."

41449. PHYSALIS PERUVIANA L. Solanaceæ. **Husk-tomato.**

Seeds from Dundas, New South Wales, Australia. Presented by Mr. Herbert J. Rumsey. Received October 21, 1915.

"*Cape-gooseberry* or *Husk-tomato.* The last season's crop cast back to purple tinge rather badly, though the fruit was very fine. We are selecting with the object of procuring a set type of yellow fruit, but the purple strain is, we find, hard to eradicate, and though the purple fruit is very fine for show purposes it has not the commercial value of the yellow fruit." (*Rumsey.*)

41450. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From Amoy, China. Presented by Mrs. Helen C. Kip. Received October 23, 1915.

"Pomelo seed from Siam or the Straits." (*Kip.*)

41451. ARTOCARPUS COMMUNIS Forster. Moraceæ. **Breadfruit.**
(*Artocarpus incisa* L. f.)

Seeds from Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received October 23, 1915.

"These are as good as chestnuts; 100 seeds to a fruit." (*Wercklé.*)

41452. MEROPE ANGULATA (Willd.) Swingle. Rutaceæ.
(*Citrus angulata* Willd.)

Seeds from Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Gardens. Received October 23, 1915.

See S. P. I. Nos. 28933, 31353, and 39168 for previous introductions.

41453 and 41454.

Seeds from Saskatoon, Canada. Presented by Prof. T. N. Willing, University of Saskatchewan. Received October 25, 1915. Quoted notes by Mr. Fairchild.

41453. PSORALEA ESCULENTA Pursh. Fabaceæ.

"An edible-rooted species of legume, which grows abundantly in Saskatchewan, according to Prof. Willing. The root has been eaten by the Indians for many years and is called the *Cree-turnip.* So far as Prof. Willing knew, its cultivation had never been attempted. It should be grown and a sufficient quantity of seed obtained to experiment with."

41454. SOLANUM TRIFLORUM Nutt. Solanaceæ.

"A low-growing species of Solanum to which my attention was directed by Prof. Willing. Apparently this is a very heavy-fruiting species of Solanum, and it is possible that hybrids might be produced between it and one of the species of Physalis. It might prove interesting to anyone working with these plants, although it has a rank flavor, resembling that of *Solanum nigrum.*"

41455. PRUNUS sp. Amygdalaceæ. **Plum.**

Plants from China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Cal., May 27, 1914.

"(No. 1193. Plants from Tsaochowfu, Shantung, China, March 11, 1914.) A flowering plum, much liked by the Chinese for forcing purposes. Generally trained in grotesque shapes and always grafted on *Amygdalus davidiana*, as the latter stands drought, transplanting, and neglect better than plums on their own roots. Chinese name *Mei*." (*Meyer.*)

41456. DIOSPYROS KAKI L. f. Diospyraceæ. **Persimmon.**

Scions from Glendora, Cal. Presented by Judge Charles Silent, through Mr. Wilson Popenoe, of the Bureau of Plant Industry. Received October 28, 1915.

"In the fall of 1914, when in California, I visited Judge Silent's place and became interested in this persimmon tree. The young twigs of all the branches were bearing the old pedicels of staminate flowers in great numbers, but after a careful search of the tree I could discover the remains of only three pedicels of pistillate flowers. If this character should hold good (and we have reason to believe it will), we have at last found the long-looked-for male *Kaki* persimmon tree, which should be planted in every orchard of Kaki persimmons as a pollinator, for Prof. H. H. Hume has demonstrated that the lack of pollination is the cause of the immature fruits dropping." (*Peter Bisset.*)

41457. CUCUMIS MELO L. Cucurbitaceæ. **Muskmelon.**

From Petrograd, Russia. Seeds presented by Capt. N. A. McCully, naval attaché, American embassy, at the request of Mr. W. P. Cresson. Received October 28, 1915.

"Seeds of a Tashkend *Dynia*, a sort of large cantaloupe. At dinner we had one of these melons and it was remarkably good, with a peculiar, delicious flavor different from that of our own cantaloupe or from that of any other that I know. The melons are brought here from the vicinity of Tashkend." (*McCully.*)

41458. BARLERIA CRISTATA L. Acanthaceæ.

Cuttings from Manila, Philippine Islands. Presented by the director, Department of Agriculture. Received November 1, 1915.

"A Philippine hedge plant, the best in the Tropics. I think it never seeds here." (*O. W. Barrett.*)

An erect or diffuse acanthaceous undershrub with the branches and upper surface of the leaves usually downy, with yellow hairs, and with dense, often compound, ovate spikes of purple, blue, or white flowers. The corolla is about 1½ inches long, the upper half funnel shaped and spreading into ovate lobes one-half inch in length. Wild everywhere in the lower hills of northeastern and central India and probably in the mountains of southern India also. (Adapted from *Hooker, Flora of British India, vol. 4, p. 488, 1884.*)

41459. MORUS NIGRA L. Moraceæ. **Mulberry.**

Cuttings from Biggs, Cal. Procured from Mr. F. Haselbusch by Mr. R. L. Beagles to be grown at the Plant Introduction Field Station, Chico, Cal.

"A very large, black, subacid mulberry. Said to be of Russian origin." (*J. E. Morrow.*)

41460. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.
Japanese apricot.

Bud sticks from Yuba City, Cal. Obtained from Dr. J. H. Barr by Mr. R. L. Beagles to be grown at the Plant Introduction Field Station, Chico, Cal.

"A very large, spreading tree, bearing dense masses of white flowers. Growth very vigorous. Very beautiful in spring. Fruit edible, but small." (*J. E. Morrow.*)

41461. PYRUS OVOIDEA Rehder. Malaceæ. **Pear.**

Seeds taken from fruit received from the Arnold Arboretum, Jamaica Plain, Mass. Growing at the Plant Introduction Field Station, Chico, Cal.

For propagating and testing.

41462. CASTANEA PUMILA × CRENATA. Fagaceæ. **Hybrid chestnut.**

Seedlings from hybrid trees. The parent trees were the result of a cross between the Japanese chestnut and the American chinkapin made by Dr. Walter Van Fleet. Growing at the Plant Introduction Field Station, Chico, Cal.

41463. JUNIPERUS CEDRUS Webb. Pinaceæ. **Teneriffe juniper.**

Seeds from Teneriffe, Canary Islands. Collected by Dr. George V. Perez and presented through the Royal Botanic Gardens, Kew, England. Received November 1, 1915.

"This valuable tree, which is nearly extinct, is said to be the quickest growing of all junipers. I have carefully watched the growth of some in my garden at Villa Orotava, and can report an average of over 3 feet a year. *Juniperus cedrus* begins to seed here within five years of planting, so that its propagation is easy, at any rate in a suitable climate. If treated in the following manner, it germinates much more promptly and abundantly. The seeds should be carefully extracted from the galbulus, plunged in boiling water for 10 seconds, then inclosed in a canvas or calico bag and immersed in cold water, and then sown, preferably in heather earth. It is important that plants of our flora should be tried almost exclusively in California and perhaps in Florida; for although *Juniperus cedrus* stands frost in its natural habitat at great altitudes, there is no doubt that our plants ought to be experimented with in climates like ours, where in the coast region we never have frost and the rains occur only in the winter months. I do not think you can lay too much stress on the fact that the seeds I have sent you should be tried only in southern California." (*Perez.*)

41464. ANNONA SQUAMOSA L. Annonaceæ. **Sugar-apple.**

Seeds from Saigon, Cochin China. Presented by Mr. P. Morange, Director of Agriculture. Received November 2, 1915.

"These seeds are known in Cochin China under the name of *Pomme-cannelle du Cap* (Cape cinnamon-apple.) The flesh of fruits of this variety when ripe presents a firm texture, with seeds comparatively rare, and does not split open, as is the case with the ordinary variety. This peculiarity allows the transportation of the fruit for long distances and should certainly make its exportation easy." (*Morange.*)

41465. PRUNUS JAPONICA Thunb. Amygdalaceæ.

From Changchun, Manchuria. Seeds presented by Dr. R. J. Gordon, Medical Mission Hospital. Received November 2, 1915.

"*Oulir* [*yü li*] stones." A bushy plant rarely over 5 feet high, with broadly ovate, acuminate, coarsely double-serrate leaves, rose-colored or blush flowers, in twos or threes, appearing with the leaves, and globular or short-oblong fruits, one-half inch in diameter, smooth and shining, wine red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture.*)

41466 and 41467.

Seeds from Bangalore, India. Presented by Hodson & Co. Received November 3, 1915.

41466. ATALANTIA CEYLANICA (Arn.) Oliver. Rutaceæ.

See S. P. I. No. 41444 for previous description.

41467. PLEIOSPERMIUM ALATUM (Wight and Arnott) Swingle. Rutaceæ. (*Limonia* alata Wight and Arnott.)

See S. P. I. No. 41445 for previous description.

41468 and 41469. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bael.** (*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received November 3, 1915.

Seeds from what is said to be the only tree of this species in the islands.

41470. QUISQUALIS INDICA L. Combretaceæ.

Seeds from Kiayingchow, Swatow, China. Presented by Rev. George Campbell, through Mr. George Hanson, American consul, Swatow, China. Received November 23, 1915.

"*Kyun-tz* [chün tzŭ]. A vigorous climber with showy flowers, white at first but changing to pink. The seeds are used by the Chinese as a vermifuge and are sold at native drug shops." (*Campbell.*)

41471. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

Seed borne by a tree of S. P. I. 21249, sent to Mrs. Bow on February 20, 1911. American consul general. Received November 6, 1915.

"Seeds of a watermelon of the type which is most frequently found in the Constantinople market, the small spherical melon. These seeds were taken from a particularly fine fully ripe specimen, about 8 inches in diameter, with a good, sweet flavor, a very thin rind, and slightly fibrous flesh. These melons usually are on the market from early in July till the end of October. They vary in diameter from 4 to 15 inches." (*Ravndal.*)

41472. MACADAMIA TERNIFOLIA F. Mueller. Proteaceæ. **Queensland nut.**

From Homestead, Fla. Presented by Mrs. L. L. Bow. Received November 6, 1915.

Seed borne by a tree of S. P. I. 21249, sent to Mrs. Bow on February 20, 1911.

"You may be interested to know that these nuts make a delicious cake, and I have also used them in sandwiches and salads. My tree is near the laundry and gets a great deal of wash water, but it has had very little fertilizer besides the soapsuds." (*Bow.*)

41473. MEIBOMIA PURPUREA (Mill.) Vail. Fabaceæ.
(*Desmodium incanum DC.*)

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received November 8, 1915.

"I received this seed from a place on the near plateau, at an altitude of 2,500 feet, where the temperature goes down a few degrees below freezing point every winter." (*Knatz.*)

41474. DOCYNIA DELAVAYI (Franch.) Schneider. Malaceæ. **Wild pear.**

From Yunnanfu, China. Presented by Father Ducloux, Yunnanfu Catholic Mission, through the acting Commissioner of Customs, Mengtsz, China. Received November 6, 1915.

"The tree is not often found in the regions around Yunnanfu." (*Ducloux.*)

These cuttings were sent in response to our request for a Pyrus, which Dr. Augustine Henry described in a letter some years ago, with fruits as large as an apple and edible. There are four ovules in each locule, yet it is rather an apple than a quince. It is not a good fruit as it stands, but it has not been cultivated by the Chinese, and its possibilities are unknown. It is called *to-i.*

41475. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*Prunus sargentii* Rehder.) Amygdalaceæ. **Sargent's cherry.**

From New Haven, Conn. Purchased from the Elm City Nursery Co. Received November 6, 1915.

One-year-old seedlings raised from seed obtained from the Arnold Arboretum. To be used in the cherry-stock investigations by Department officials.

41476. PÆONIA MLOKOSEWITSCHI Lomakin. Ranunculaceæ. **Peony.**

Seeds from Tiflis, Caucasus, Russia. Presented by Mr. A. Rolloff, director, Botanic Garden. Received November 10, 1915.

"This, the most handsome of the yellow-flowered paeonies, thrives under the treatment suitable for the other forms belonging to the herbaceous section of the genus, and appears as hardy and as satisfactory under cultivation as they have proved. The glaucous leaves with their red veins and margins contrast sufficiently with the more purely green leaves of *P. wittmanniana* to attract attention, and it is certain to become a favourite with gardeners. The fine sulphur-yellow flowers are more striking than the whitish yellow blooms of *P. wittmanniana. Paeonia mlokosewitschii* was discovered by Mlokosewitsch near Lagodekhi in the eastern part of the central Caucasus." (*Curtis's Botanical Magazine, pl. 8173, 1908.*)

41477. CORDEAUXIA EDULIS Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

Seeds from Aden, Arabia. Presented by Mr. A. G. Watson, American vice consul, who obtained them from the governor of Italian Somaliland at Magadoxo. Received November 13, 1915.

An arid-land legume used as famine food by the Somalis.

See S. P. I. No. 29122 for previous introduction.

41478 to 41480.

Plants from Indian Head, Saskatchewan, Canada. Presented by Mr. Norman M. Ross, Forest Branch, Department of the Interior. Received November 15, 1915.

41478. BETULA PENDULA Roth. Betulaceæ. **Birch.**

"Plants grown from seed picked from our plantation, the original seed of which was obtained from Russia. Two-year-old seedlings were planted 4 feet apart each way in 1908 and show a height of 12 to 16 feet and have borne seed for the past two or three years." (*Ross.*)

See S. P. I. Nos. 39489 and 39990 for previous introductions and description.

41479. CARAGANA PYGMAEA (L.) DC. Fabaceæ.

See S. P. I. No. 33756 for previous introduction.

For an illustration of this hedge plant, see Plate VII.

41480. CARAGANA ARBORESCENS Lam. Fabaceæ. **Siberian pea tree.**

"Cuttings of the prostrate form; grown from seed picked in our ordinary hedges. We find that probably 1 per cent of the seedlings show these characteristics. This plant 5 years old shows a spread of 4 feet. We think this form can be used effectively for landscape planting." (*Ross.*)

41481. DUMORIA HECKELI A. Chevalier. Sapotaceæ. **Bako.**

Seeds from Coomassie, Gold Coast Colony. Presented by Mr. A. E. Evans, traveling inspector, Agricultural Department. Received November 13, 1915.

"A gigantic sapotaceous tree attaining a height of 110 to 160 feet, with a cylindrical trunk 3¼ to 6½ feet in diameter near the base [circumference approximately 10 to 20 feet], and rising 90 feet or more before bearing branches. Leaves obong-lanceolate, papery, 2¾ to 4½ inches long and 1 to 1½ inches wide. Flowers solitary or in clusters of 2 to 3 in the axils of the leaves. Calyx campanulate, corolla rotate, greenish white, three-fourths inch in diameter, slightly fragrant. Fruit at maturity greenish yellow, sphero-ovoid, like a russet apple, with mellow, sickening pulp, bitter and nonedible. Geographic distribution, Ivory Coast, Gold Coast, Liberia, in the vast virgin forests. Flowers in May. The timber, reddish with beautiful markings, is one of the best African substitutes for mahogany." (Translation from the original description, *Comptes Rendus de l'Académic des Sciences, Paris, vol. 145, p. 226, 1907.*)

41482. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

Seeds from Chungking, China. Presented by Mr. E. Widler. Received November 15, 1915.

"*Ping ma tzŭ.* A plant 6 to 9 feet in height, bearing white flowers; it takes about six months to grow. The seeds ripen throughout the season from early summer to frost. The seed is used principally for castor oil, which is prepared by pressing. The seeds are brown and black; they sell in the market for 1,000 cash for 2½ catties." (*Widler.*)

A HARDY LOW-GROWING HEDGE PLANT (CARAGANA PYGMAEA (L.) DC.), S. P. I. No. 41479.

There is a growing demand for hedge plants and windbreak plants on the Plains of the Dakotas. The tall-growing Caraganas play a great rôle as windbreaks on the Canadian prairies, and this handsome low-growing species of the same genus is worthy of a place in the dooryards and along the drives throughout the bleak northwestern country. It will take rank with the barberry, for, although it does not have red berries in winter, it is covered in summer with attractive flowers. (Photograph from Mr. N. M. Ross, Forest Nursery Station, Indian Head, Saskatchewan.)

41483. JUNIPERUS CEDRUS Webb. Pinaceæ. **Teneriffe juniper.**

Seeds from Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received November 17, 1915.

See S. P. I. No. 41463 for previous introduction and description.

41484. JUBAEOPSIS CAFFRA Beccari. Phœnicaceæ.

Pondoland coco.

Seeds from Johannesburg, Union of South Africa. Purchased from Mr. J. Burtt Davy, botanist, Agricultural Supply Association. Received September 21 and October 7, 1915.

"I have just learned of the existence of a grove of wild coconut palms along the coast some 70 miles south of Port Shepstone. This appears to be a new species of coconut, adapted to warm temperate conditions; the nuts are said to be smaller than those of the typical *Cocos nucifera*. The fruits have the flavor of coconut and are much prized by the Tondos, who traveled scores of miles to collect and sell them. They are used as food, and, I am told, for oil." (*Davy.*)

"Until quite recently only two genera of palms were known from South Africa. A few years ago Mr. Charles Ross, then conservator of forests at Umtata, reported the occurrence of another kind in Pondoland. This has now been found to be the representative of a new genus named Jubaeopsis, from its nearest ally, Jubaea, a monotypic genus of South America (Chili). The fruit of Jubaeopsis differs from that of Cocos by the position of the germinating holes, which in the latter genus are situated near the base of the nut, but in Jubaeopsis near its equator. The endosperm is hollow, as in the coconut, and also of a sweetish taste, but without milk. A tree up to 20 feet high, with leaves 12 to 15 feet long. The ♂ flowers are inserted on the upper parts of the branches of the spadix and possess 8 to 16 stamens, the ♀ flowers being on the lower parts. The fruits are about the size of walnuts, but nearly globular, the fibrous pericarp being yellow when ripe. The palm occurs, as far as known, only at two localities in Pondoland, viz., at the mouths of the Umsikaba and the Umtentu Rivers, in both cases only on the northern bank and in close proximity to the water. As this is, apart from the widely spread coconut palm, the only member of the tribe which occurs in Africa, all the others being American, its discovery throws some new light on the origin of the Cocoineæ and the relationship of our flora." (*Marloth, Flora of South Africa, vol. 4, p. 48.*)

41485 to 41488.

From Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received November 16, 1915. Quoted notes by Mr. Wercklé.

41485. LICANIA PLATYPUS (Hemsl.) Fritsch. Rosaceæ. **Sansapote.**

"Seeds of the forest sansapote, which is the poorest and smallest fruit of all four or five species of Licania; still the little meat it has is quite good. A splendid, very large forest tree, the timber of which is considered nearly as valuable as Cedrela. I will try to graft the *Couepia* on it."

41486 and 41487. SOLANUM sp. Solanaceæ.

"Root cuttings of a very low-growing perennial herb, which makes a single, vertical root like a yuca (manioc), which enters into the soil to a great depth. I do not know whether it is edible or poisonous. The soft herbaceous plant spreads over the ground at a height of a few inches; the large, solitary, night-blooming flowers are a beautiful pure white and have a very fine fragrance, which, however, is only noticeable at a very short distance from the plant, though it is not mild."

41485 to 41488—Continued.

41488. ANNONA PURPUREA Moc. and Sesse. Annonaceæ. **Soncoya.**

"This fruit has only two defects—the seeds are too large and are 'cling.' It is recommended for crossing with *Annona squamosa* and *Annona cherimola*."

41489. HALESIA CAROLINA MONTICOLA Ashe. Styracaceæ.

Mountain silverbell.

Seeds from Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received November 13, 1915.

"The silver-bell tree of the Southern States, *Halesia tetraptera*, has long been cultivated in northern gardens. It is usually shrubby in habit with several stout, wide-spreading stems, and here at the North rarely grows more than 15 to 20 feet high. It is an inhabitant of the Southern States from West Virginia and southern Illinois to northern Florida and eastern Texas. It grows at low altitudes and does not appear to ascend to the slopes of the high Appalachian Mountains, although the Halesia of those mountain forests was long considered identical with the lowland tree. The Halesia of the high slopes, however, is a tree often 80 to 90 feet high, with a trunk 3 feet in diameter, sometimes free of branches for a distance of 60 feet from the ground. It is apparently only in recent years that this mountain tree has been introduced into cultivation by the Biltmore Nursery. From Biltmore it was sent to the parks of Rochester, N. Y., and from Rochester it came to the Arboretum with a description of its peculiar habit, large flowers, and fruit. The mountain tree, which has lately been distinguished here as var. *monticola*, grows as a tree from the time the seed germinates, and the seedlings show no variation of habit. Young trees are clean stemmed with short branches which form a narrow pyramidal head. The leaves are of rather different shape and less hairy than those of the lowland tree; the flowers are fully a third larger and the fruit is nearly twice as large. Trees less than 10 feet produce flowers and fruit in abundance. There is now every reason to believe that the mountain Halesia will prove one of the handsomest flowering trees of large size which it is possible to cultivate in this climate. Its tall trunk and narrow head suggest that it may prove a good street and roadside tree." (*Arnold Arboretum, Bulletin of Popular Information.*)

41490. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Tubers from Joinville, Brazil. Presented by Mr. Jean Knatz. Received October 25, 1915.

"*Cara* (*Kara*). *Cara* is much used to mix with flour after being baked, in order to make the bread used by the farmers, into which enter sweet potatoes, cassava, flour and 'taya,' especially now that wheat flour is so expensive. I think the larger sort of '*cara*' is the taro of the South Sea Islands." (*Knatz.*)

41491 and 41492.

Seeds from Chungking, China. Presented by Mr. E. Widler. Received November 18, 1915. Quoted notes by Mr. Widler.

41491. CUCURBITA PEPO L. Cucurbitaceæ. **Nan kua.**

"*Nan kua.* A creeping plant 10 to 15 feet long; grows best at a temperature of 70° to 110° F. It takes about three months to mature; bears yellow flowers and fruits in the autumn. The fruit is 5 feet in circumference and weighs about 40 catties. It is used only as a vegetable

41491 and 41492—Continued.

and is prepared by sweetening and boiling. It sells in the market for about 20 cash per catty."

41492. BENINCASA HISPIDA (Thunb.) Cogn. Cucurbitaceæ. **Wax gourd.**

"*Tung kua.* A plant 20 to 30 feet long. Grows best at a temperature of 70° to 110° F.; takes about six months to mature; bears yellow flowers and fruits in the autumn. The fruit is 3 feet long and 2 feet in circumference; is used only as a vegetable, boiled and sweetened, and sells in the market at 25 cash per catty."

41493. ANNONA CHERIMOLA Miller. Annonaceæ. **Cherimoya.**

Seeds from Brisbane, Australia. Presented by Mr. Leslie Gordon Corrie. Received November 22, 1915.

41494. RHAPHITHAMNUS CYANOCARPUS (Bert.) Miers. Verbenaceæ. **Espina blanca.**

Seeds from Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received November 22, 1915.

"This plant, *espina blanca* (white thorn), which I found in the Canyon Bariloche, is an evergreen belonging, I believe, to the Chilean vegetation. Animals eat it the year round and like it very much, horses as well as cattle." (*Vereertbrugghen.*)

41495. RANDIA sp. Rubiaceæ.

Seeds from Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received November 24, 1915.

"From the Pacific coast. Is much more beautiful than *Randia aculeata*, but it is suitable for hot climates only." (*Wercklé.*)

41496. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

Seeds from San Jose, Costa Rica. Presented by the Department of Agriculture. Received November 24, 1915.

"*Palta.* From tree A, bearing in October; large and medium good." (*Wercklé.*)

41497. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Bordeaux, France. Presented by Mr. George A. Bucklin, jr., American consul. Received November 26, 1915.

"For these seeds we are indebted to a resident of this region, M. Denjean, of Bordeaux, France, who has carefully selected seeds of the finest specimens of fruit coming to his attention, all grown in this section of southern France. Unfortunately, the names of the varieties have not been preserved and the seeds identified, but it is hoped that the seeds which come from excellent miscellaneous stock will be of some service." (*Bucklin.*)

41498. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

Seeds from Milan, Italy. Presented by Mr. John H. Grout, American consul. Received November 26, 1915.

"Hardly any of the peaches to be found in the markets here are grown in this district, being brought from the outside. This is a mixed lot of seed obtained from a seed house here." (*Grout.*)

41499. Dipsacus fullonum L. Dipsacaceæ. **Teasel.**

Seeds from Marseille, France. Presented by Mr. A. Gaulin, American consul general. Received November 23, 1915.

"Seeds of the best variety of teasel grown in the Avignon and Department of Vaucluse region. This sample was obtained from Messrs. G. and E. Duckers, of Gavaillon, Vaucluse." (*Gaulin.*)

41500. Spathodea campanulata Beauv. Bignoniaceæ.

Seeds from Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received November 23, 1915.

See S. P. I. Nos. 31953 and 39415 for previous introductions.

41501. Mimusops elengi L. Sapotaceæ. **Munamal.**

Seeds from Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received November 27, 1915.

"A large evergreen tree, with glossy, oval, fleshy leaves. The wood is good for cabinetmaking, joinery, and turning. The fruit, which is shaped like an olive, is eaten, but its flavor is not very agreeable. The odorous flowers, which possess astringent and tonic properties, serve for the preparation of a perfume; the red, woody, fibrous bark is astringent and is used as a gargle for salivation. The fruit and seeds furnish an oil for burning. The root is astringent." (*Lanessan, Les Plantes Utiles des Colonies Française.*)

See S. P. I. No. 30957 and 37726 for previous introduction.

41502. Arbutus unedo L. Ericaceæ. **Strawberry tree.**

Seeds from Sacramento, Cal. Presented by Mr. W. Vortriede, Capitol building and grounds. Received December 1, 1915.

"An evergreen tree, from 15 to 30 feet high, occasionally 40 feet in its native districts in Ireland, but nearly always a wide-topped shrub under cultivation; young shoots glandular hairy. Leaves smooth, 2 to 4 inches long, dark shining green. Flowers produced from October to December in drooping panicles 2 inches long and wide. Corolla white or pinkish, pitcher shaped, one-fourth inch long. Fruit globose, strawberrylike, three-fourths inch across, orange red, rough on the surface. It ripens during the autumn following the production of the flowers, at the same time as the succeeding crop of blossoms. Native of the Mediterranean region and southwestern Ireland, especially on the islands and shores of the Lakes of Killarney, where it attains its largest dimensions. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 203.*)

41503. Elaeocarpus sp. Elæocarpaceæ.

Seeds from Kamerunga, via Cairns, Australia. Presented by Mr. J. A. Hamilton. Received October 18, 1915.

"Native edible nut."

41504 to 41508.

Seeds from Matania El Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received November 30, 1915.

41504. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. **Natal plum.**

"This handsome shrub, 15 to 18 feet in height, originally from South Africa, is cultivated in southern Florida and southern California for ornament and for its scarlet edible fruits the size of a plum. It is considered one of the best hedge plants in South Africa and is sometimes used for this purpose in the United States. The foliage is dense, glossy green in color; leaves opposite, thick, and leathery, 1 to 2 inches long, flowers star shaped, fragrant, about 2 inches across and borne in small terminal cymes. The plant blooms most abundantly in the early spring, but produces a few scattering flowers throughout the year; their waxy texture and fragrance are suggestive of the jasmine. The fruits, most of which ripen in summer, are ovoid or elliptic in form, commonly 1 to 2 inches long, with a thin skin inclosing the firm granular, reddish pulp, toward the center of which are several thin papery seeds, sometimes as many as twenty or more. The fruit is very attractive in appearance, but is not generally relished when eaten out of hand; its flavor suggests the raspberry or cranberry, and when stewed it yields a sauce which greatly resembles that made from the latter fruit. It is also used for jelly and preserves. It is not of commercial importance in the United States, but is frequently planted in gardens for ornament and fruit. When used as a hedge plant it withstands shearing admirably, but yields little fruit under these conditions. Its growth is compact and low, and it has the interesting habit of branching dichotomously. The plant is easily propagated by layering, and it is not difficult to bud, using the common method of shield budding. Late spring is the best time to do the work." (Adapted from *W. Popenoe*, in *Bailey, Standard Cyclopedia of Horticulture*, under *Natal plum, vol. 4, p. 2114.*)

See S. P. I. Nos. 11734, 28722, and 34166 for previous introductions.

41505. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. **Natal plum.**

See previous number (S. P. I. No. 41504) for description.

41506. CARISSA CARANDAS L. Apocynaceæ. **Caraunda.**

"*Maha-karamba* (Singhalese), *Perunkila* (Tamil). A small tree or large shrub, with sharp, rigid, forked thorns and oval leaves, native of the dry region of Ceylon; also of India and Malaya. It blossoms chiefly in February and March and ripens its fruits in August and September. The fruit when ripe much resembles a damson, both in size and color, but in the interior are a number of small seeds. In India it is made into a pickle just before it is ripe, and is also used in tarts and puddings, being considered to resemble gooseberries in flavour. For these purposes it is said to be superior to any other Indian fruit. When ripe it makes a very good jelly. The plant is commonly employed for barrier hedges, for which purpose it is well suited. Propagated from seed. Suited to dry districts at low elevations." (*MacMillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 149.*)

See S. P. I. Nos. 23750 and 34364 for previous introductions.

41507. PHOENIX FARINIFERA Roxburgh. Phœnicaceæ. **Palm.**

Habitat, India and South China. A dwarf species, having a stem 2 feet high, completely enveloped by the leaf sheaths; fronds 6 feet long,

41504 to 41508—Continued.

unarmed, pinnate, reclinate, with long, awl-shaped, plicate leaflets; flowers diœcious; spathe polyvalved; spadix erect; fruit a drupe, oval, 1 cm. in length, fleshy, black, hard; stone single, oblong, horny. In Cochin China the plant goes under the name *Cay-cho la*. The trunk stripped of its leaves contains a certain quantity of starch which the poor use in case of need. This palm stands the climate of the south of France without protection. It is adapted to sandy and otherwise dry and barren land, but prefers the vicinity of the sea. (Adapted from *Von Mueller, Select Extra-Tropical Plants, p. 373*, and *De Lanessan, Les Plantes Utiles des Colonies Françaises, p. 784.*)

See S. P. I. No. 32821 for previous introduction.

41508. Musa sp. Musaceæ. **Banana.**

"Banana seeds which were produced without artificial pollination. I am not sure whether the pollen is from the same genus or from a Strelitzia growing near it. It is remarkable that only the variety *Orinoco* (from Florida) develops seeds, while several other varieties growing also in the vicinity are seedless." (*Bircher.*)

41509. Osterdamia tenuifolia (Trin.) Kuntze. Poaceæ. **Mascarene grass.**
(*Zoyisa tenuifolia* Trin.)

Seeds from the island of Guam. Presented by Mr. J. B. Thompson, Guam Agricultural Experiment Station; obtained by him from the Bonine Islands. Received in 1912.

"This grass is used for lawn purposes in Japan and is said to succeed well about Yokohama. It was originally described from the Mascarene Islands. It has been tested in a preliminary way in California, at Biloxi, Miss., and at Miami, Fla. The grass makes a very beautiful dark-green turf, the leaves being short, never more than an inch or two long, much resembling the turf of red fescue. Stout rootstocks are produced in abundance, and these have a tendency to elevate the turf, a defect which can be remedied by proper rolling. The grass has considerable promise for fine turf and for golf purposes in the South." (*C. V. Piper.*)

41510 to 41516. Triticum aestivum L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

Seed from Quetta Valley, Baluchistan. Presented by Mr. A. Howard, Imperial Economic Botanist, Pusa, Bengal, India. Received November 2, 1915. Quoted notes by Mr. Howard.

41510. "Common winter wheat. Spike bearded, 10 to 13 cm., tapering; glumes white, firm, glaborous; beaks 1 to 25 mm.; kernel red, large, 7 to 8 mm., hard."

41511. "Common winter wheat. Spike bearded, 10 to 12 cm., cylindrical; glumes white, glabrous; kernel amber, medium soft; beaks (*a*) 7 heads, 1 to 15 mm., (*b*) 3 heads, 1 to 2 mm."

41512. "Common winter wheat. Spike bearded, beards short, 3 to 4 cm.; glumes white, pubescent, kernel amber, medium hard; beaks 1 to 3 mm."

41513. "Common winter wheat. Spike bearded, cylindrical, 10 to 12 cm.; glumes white, pubescent; kernel amber, medium hard; beaks 1 to 20 mm."

41510 to 41516—Continued.

41514. "Common winter wheat. Spike bearded, tapering, 9 to 12 cm.; glumes brown, glabrous; kernel red, medium soft; beaks 1 to 15 mm."

41515. "Common winter wheat. Spike bearded, cylindrical, 10 to 12 cm.; glumes brown, glabrous; kernel amber (?), medium soft; beaks 1 to 25 mm."

41516. "Common winter wheat. Spike bearded, beards short, 3 to 4 cm.; spike cylindrical, 10 to 11 cm.; glumes brown, pubescent; kernel amber, medium soft; beaks 1 to 25 mm."

41517 to 41519. PYRUS COMMUNIS L. Malaceæ. Pear.

From Salmon Arm, Canada. Presented by Mr. Thomas A. Sharpe. Received December 3, 1915. Quoted notes from L. Späth's catalogue, except as otherwise shown.

41517. *Eva Baltet.* "A very large, beautifully colored, melting, sweet pear, very juicy, and similar in the quality of the flesh to the *Holzfarbigen butterbirne* (*Fondante des bois*), but better flavored. Tree bearing early and heavily from mid-October to the end of November. This new French introduction is declared by a large number of growers to be an excellent pear, worthy of distribution."

Mr. T. A. Sharpe, ex-superintendent of the Agassiz (B. C.) Experiment Station, is very much interested in pear culture and is fruiting out a good many French varieties. He told me that the *Jules Guyot* was a much heavier bearer than the Bartlett, which it resembles very closely, and it has none of the objectionable muskiness of the Bartlett, and that the *Marguerite Marillat*, which is one of the few pears that fruit on the west coast of Scotland, does very well at Salmon Arm, B. C. The variety called *Eva Baltet*, an early fall pear, does particularly well here, and fruits abundantly; it was introduced in 1897. The fruits do not pull down the limbs, and it begins fruiting at the crotch." (*David Fairchild, trip report to Canada including British Columbia, fall of 1915.*)

41518. *Doktor Jules Guyot.* "A large to very large, excellent table and market pear, ripening in September. Tree bearing early and very heavily; not tender.

41519. *Marguerite Marillat.* "A large to very large, fine table pear, bearing early and heavily."

41520 to 41554.

Seeds from Bhutan, India. Collected by Mr. R. E. Cooper, and presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received November 18, 1915. Quoted notes by Mr. Cooper.

41520. PRIMULA sp. Primulaceæ. Primrose.

"(No. 4761.) Grows at an altitude of 11,000 feet in marshy peat in the open. White with star of yellow on corolla lobes."

41521. PRIMULA sp. Primulaceæ. Primrose.

"(No. 4762.) Two feet tall, like *sikkimensis*, but brilliant golden yellow flowers. Grows in open glades by streams in Abies forest at an altitude of 11,000 feet. Clumps on peaty turf on bowlders in the streams themselves."

41520 to 41554—Continued. (Quoted notes by Mr. R. E. Cooper.)

41522. LLOYDIA sp. Liliaceæ.

"(No. 4763.) Common in an open marsh at an altitude of 11,000 feet. Small, yellow flowered."

41523. PHYTEUMA sp. Campanulaceæ.

" (No. 4766.) A plant 2 feet high. Grows on alpine peat turf at an altitude of 13,000 feet, a gray hairy mound with pendent narrow leaves emerging. Flowers never seen. Attacked by yaks, sheep, partridges, and spiders."

41524. WULFENIA AMHERSTIANA Benth. Scrophulariaceæ.

"(No 4767.) A small herb found among loose pebbles and streams at an altitude of 14,000 feet, with rosette 6 inches in diameter. Flowers blue, small, in long spike."

41525. MECONOPSIS SINUATA Prain. Papaveraceæ.

" (No. 4768.) A prickly plant 1 to 2 feet high among small rhododendron bushes at an altitude of 13,000 feet. Flowers blue, 2 to 3 inches in diameter."

41526. SWERTIA sp. Gentianaceæ.

" (No. 4769.) A white-flowered mound 1 foot high on poor peaty soil overlying scree at altitudes of 13,000 to 14,000 feet."

41527. POLYGONUM sp. Polygonaceæ.

" (No. 4770.) A clumpy Polygonum among stones and peaty spots in gaps in rhododendron forests at an altitude of 13,000 feet. Club 1 foot thick or rosette larger. Flower spike large and pendent, rich red, 10 inches long at times. Also seen in rock ledges at its best."

41528. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4771.) One to two feet high, growing among rhododendron bushes at an altitude of 13,000 feet. Like *Primula obliqua*, dead white with no eye to speak of and with heads of eight flowers."

41529. POTENTILLA sp. Rosaceæ.

"(No. 4772.) Common on uplands, at times in peaty turf, at altitudes of 13,000 to 15,000 feet. A little heap of yellow flowers 9 inches in diameter."

41530. IMPATIENS sp. Impatientaceæ.

" (No. 4773.) Growing in 6-inch turfs by a stream edge among sandy compost at an altitude of 12,000 feet. Flowers yellow."

41531. CALTHA sp. Ranunculaceæ.

"(No. 4774.) A golden-yellow flowered, tufted plant in 2 inches of water in a swamp at an altitude of 13,000 feet."

41532. SWERTIA sp. Gentianaceæ.

" (No. 4775.) A small purple-flowered, procumbent-habited plant in peaty turf at an altitude of 13,000 feet."

41533. CIRSIUM sp. Asteraceæ.
(*Cnicus* sp.)

" (No. 4776.) Grows on scree among Juniperus at an altitude of 13,000 feet. Large, white haired, prickly. White head of one to five inflorescences, 2 inches in diameter.

41520 to 41554—Continued. (Quoted notes by Mr. R. E. Cooper.)

41534. CREMANTHODIUM sp. Asteraceæ.

"(No. 4777.) With yellow nodding heads, on dry exposed grass-covered slopes at altitudes of 13,000 to 14,000 feet."

41535 to 41540. PRIMULA spp. Primulaceæ. **Primrose.**

41535. "(No. 4779.) A small plant occurring in swampy peat at an altitude of 13,000 feet. Large flowers of delicate heliotrope, sweet scented; two to four in a head on a slender stem."

41536. "(No. 4780.) Like *sikkimensis*, but a smaller plant. Six inches high in swampy peat, growing with No. 41535. Flowers yellow, hanging three to five in a head; very delicate."

41537. "(No. 4781.) Among peaty soil and rocks of scree at altitudes of 13,000 to 14,000 feet. Flowers yellow."

41538. "(No. 4783.) A*P. nivalis?*) Grows among moist peaty turf among bowlders by streams at an altitude of 13,000 feet. Showy heads of purple flowers, with eye. Flowers appear before leaves."

41539. "(No. 4784.) Grows at edge of marsh in moist peat; altitude 13,000 feet. Reticulate, petiolate leaves and leafly bracts at base of loose inflorescences of yellow flowers of *sikkimensis* type."

41540. "(No. 4785.) Grows in marsh at an altitude of 13,000 feet; flowers small, white, in loose head; leaves small and coriaceous."

41541. MECONOPSIS HORRIDULA Hook. f. and Thoms. Papaveraceæ.

"(No. 4786.) Plant tufted on peaty turf at an altitude of 15,000 feet. Large sky-blue flowers."

41542 to 41544. PRIMULA spp. Primulaceæ. **Primrose.**

41542. "(No. 4787.) Grows in sandy soil on sheltered rock ledges at an altitude of 14,000 feet. Allied to *Primula tibetica*, but heads much looser and flowers larger."

41543. "(No. 4788.) A small primrose with large flowers, pale heliotrope, two to four on a loose spike. Grows in shaded crevices at an altitude of 13,000 feet."

41544. "(No. 4744.) Grows in moist peat at an altitude of 10,000 feet. Flowers yellow."

41545. POLYGALA sp. Polygalaceæ.

"(No. 3985.) The rosette is a nest of leaves 4 inches in diameter in moist peaty soil. There is a head of small white flowers one-half inch in diameter on a stalk 3 inches high; growing at an altitude of 11,000 feet."

41546. EUPHORBIA sp. Euphorbiaceæ.

"(No. 4351.) A tuberous herb growing on peaty slopes and meadows at an altitude of 9,000 feet. Inflorescences a showy gold."

41547. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4392.) (Perhaps *Primula elongata.*) In fruit among rhododendron bushes at an altitude of 12,500 feet; flowers said to be white."

41548. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"(No. 4397.) A variety growing at an altitude of 12,000 feet and preferring moist soil, with dead leaves in compost in the shade of Betula, rhododendron bushes, etc. Rosette 1 foot in diameter, flower spike 1 foot high; seen only in fruit."

41520 to 41554—Continued. (Quoted notes by Mr. R. E. Cooper.)

41549. POLYGONUM sp. Polygonaceæ.

"(No. 4407.) A clump of Polygonum among stones and peaty spots in gaps in a rhododendron forest at an altitude of 13,000 feet. Clump 1 foot thick or rosette larger. Flower spike large and pendent, rich red, 10 inches long at times. Also seen in rock ledges at its best."

41550. AQUILEGIA sp. Ranunculaceæ.

"(No. 4410.) An herb 1 foot high in fruit among Cyananthus and moist undergrowth of Betula forest at an altitude of 10,000 feet. Flowers never seen."

41551. CORYDALIS sp. Papaveraceæ.

"(No. 4511.) An herb 1 foot high on moist gravel by a stream at an altitude of 11,000 feet. Very showy sprays of yellow, brown-tipped flowers, usually under light shade of Acers, etc."

41552. PRIMULA PETIOLARIS Wallich. Primulaceæ. **Primrose.**

"(No. 4512.) Differing from No. 41548 in leaves not being hastate. Found in fruit at an altitude of 12,000 feet in moist black soil under Abies forest. Plant similar in size to No. 4397 [S. P. I. No. 41548.]"

41553. RUBUS sp. Rosaceæ. **Bramble.**

"(No. 4513.) A bush 2 feet high, showy in autumn with silver foliage and orange-yellow fruits. Common in bamboo forests at an altitude of 11,000 feet."

41554. RUBUS sp. Rosaceæ. **Bramble.**

"(No. 4514.) A bush 4 feet high on edge of Abies forest at an altitude of 12,000 feet. Leaves dark green with reddish brown calyx and fruits."

41555. HEDYSARUM BOREALE Nutt. Fabaceæ.

Seeds from Saskatoon, Canada. Collected by Mr. David Fairchild, of the Bureau of Plant Industry. Received October 25, 1915.

"This hardy, short-seasoned, early-maturing Hedysarum was collected by Prof. T. N. Willing and myself in sight of the president's residence on the grounds of the University of Saskatchewan. It was growing on rather dry hillsides and produced a plant about 2 feet high. It is apparently a heavy seeder and, according to Prof. Willing, the cattle are very fond of it. So far as he knew, it had never been cultivated, and I sent it with the idea that it might be crossed with *Hedysarum coronarium* or with species of Hedysarum sent in by Mr. Meyer from Siberia. I can not help thinking that there may be something in the cultivation of this plant for forage purposes." (*Fairchild.*)

41556 to 41565.

Seeds from Bhutan, India. Collected by Mr. R. E. Cooper and presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received November 18, 1915. Quoted notes by Mr. Cooper.

41556. GAULTHERIA sp. Ericaceæ.

"(No. 4525.) A low-creeping plant on rock surfaces and peaty alpine turf at an altitude of 12,000 feet. The showy blue berries are profuse. This is a much larger plant than the *Gaultheria trichophylla* and exists on exposed rock faces with only a mere suspicion of soil in occasional crevices."

41556 to 41565—Continued. (Quoted notes by Mr. R. E. Cooper.)

41557. CORYDALIS sp. Papaveraceæ.

"(No. 4528.) A slender herb in fruit under Abies forest at an altitude of 12,000 feet."

41558. LEYCESTERIA FORMOSA Wallich. Caprifoliaceæ.

"(No. 4535.) Caprifoliaceæ (?). A bush 6 feet high under light shade in Acer and Picea forest at an altitude of 10,000 feet. Flowers pink backed by red bracts, in dense sprays at end of fresh wood shoots."

41559. CLINTONIA sp. Convallariaceæ.

"(No. 4545.) A liliaceous plant found in loose peaty soil under rhododendron forest at an altitude of 10,500 feet. Two basal leaves and a head of delicate blue flowers pendent on a slender stem 6 inches long."

41560. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 4553.) A slender bush 6 inches high by a stream under rhododendron and Abies forest at an altitude of 11,000 feet. Has pink waxy flowers in pairs and very showy reddish fruits."

41561. SALVIA sp. Menthaceæ.

"(No. 4671.) A very fine herb 1 to 2 feet high, color vandyke to prune. In turf of exposed hilltop at an altitude of 9,000 feet."

41562. CORIARIA TERMINALIS Hemsl. Coriariaceæ.

"(No. 4736.) A procumbent shrub on sandy soil by streams and among bracken at an altitude of 10,500 feet; terminal sprays of red fruits 8 inches long. Quite hardy, I should say, as it occurs some 5,000 feet above the half hardy *Coriaria nepalensis*. Not so showy a plant as the latter, but trailing well over rock and gravel."

41563. LONICERA sp. Caprifoliaceæ. **Honeysuckle.**

"(No. 4737.) A bush 5 feet high by the edge of a stream among Salix and roses, with showy red fruits."

41564. POTENTILLA sp. Rosaceæ.

"(No. 4749.) On an exposed hilltop at an altitude of 10,000 feet in clayey soil. A silver rosette 4 inches across with sprays of yellow flowers."

41565. HYPECOUM LEPTOCARPUM Hook. f. and Thoms. Papaveraceæ.

"(No. 4751.) A procumbent herb on gravelly sandy soil. Six inches across rosette, flowers smallish but profuse, of a delicate heliotrope to rose color; foliage steel gray."

41566. PRUNUS SUBHIRTELLA AUTUMNALIS Makino. Amygdalaceæ. **Cherry.**

Plant from Colchester, England. Procured from R. Wallace & Co. Received December 4, 1915.

"Under the erroneous name of *Prunus miqueliana* this cherry has been cultivated in this country for some three or four years and has created a good deal of interest because of its flowering from November onward. Owing, probably, to the excessive mildness of the late autumn of 1913, it made a very charming display at that time. It is a deciduous small tree with nearly ovate leaves, 1½ to 3½ inches long, hairy on both surfaces. Flowers pale pink, 1 inch wide." (*Kew Bulletin.*)

41567. WASABIA PUNGENS Matsumura. Brassicaceæ. **Wasabi.**
(*Eutrema wasabi* Maxim.)

Roots from New York, N. Y. Presented by Mr. H. Terao. Received December 6, 1915.

"Before cooking, the graded wasabi is usually beaten so that the root cells may be mostly broken up, as you have perhaps learned in Japan. It is said that there is no *wasabi* for sale in New York City yet. Two Japanese restaurants here get 50 roots a year from San Francisco, where the *wasabi* comes from Japan." (*Terao.*)

41568. DIOSPYROS EBENASTER Retz. Diospyraceæ. **Black sapote.**

Seeds from Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received December 4, 1916.

A tall tree with fragrant white flowers and very sweet fruits, the size of an orange, green outside and almost black within. Native of Mexico. See S. P. I. Nos. 39719 and 40338 for previous introductions and full description.

41569. FRAXINUS EXCELSIOR L. Oleaceæ. **Ash.**

From Dublin, Ireland. Presented by Dr. A. Henry, Royal College of Science. Received December 1, 1915.

Var. *monophylla.* One-leaved ash. In this remarkable variety of the common European ash the terminal leaflet only, or occasionally one or two more, is developed. In other respects it is the same as the common ash. Its one leaf is oval or ovate, long stalked, toothed, and variable in size, usually 3 to 6 inches long, 1¼ to 2½ inches wide, but often proportionately broader or shorter. I have measured it as much as 8 inches long and 5 inches wide. This variety has arisen independently in many places, both cultivated and wild, and varied considerably. It is also known as *integrifolia*, *heterophylla*, and *simplicifolia*. The species itself is one of the most valuable of all our timber trees, yielding a whitish wood of great toughness and durability. Elwes considers it at the present time the most economically valuable of British timber trees. For some purposes, especially in coach building and implement making, it has no rival, either native or foreign. An isolated ash of goodly size makes a tree of great beauty and dignity, forming a shapely oval or rounded head of branches. It likes a deep moist, loamy soil, and thrives well on calcareous formations. In some parts of the north of England, on the east side of the Plain of York, for instance, it is a common hedgerow tree, almost as common as the elm is in the south. In such positions, especially where the adjoining fields are arable, it is not an unmixed advantage, being one of the grossest of feeders. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 567.*)

41570. INDIGOFERA TINCTORIA L. Fabaceæ. **Indigo.**

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received December 18, 1915.

See Sir George Watt's Commercial Products of India for a full description of the various indigo-yielding species of Indigofera and the cultivation and manufacture of indigo.

41571. CROTALARIA CUNNINGHAMII R. Brown. Fabaceæ.

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received December 7, 1915.

"I am of the opinion that under cultivation it will prove an acquisition for ornamental planting, and in dry situations it may become a rival to the herbaceous Calceolaria. The plant grows about 2 feet high and will bear topping to any extent, every lateral throwing up a spike of flowers of bright orange yellow." (*Pink.*)

Though unattractive as to the color of the flower, this is a very curious and striking greenhouse plant, the soft velvety pubescence that clothes all the surfaces with a uniform glaucous hue at once arresting the attention. It is a native of the dry, almost desert regions of northwestern and central Australia, growing on sandy ridges, from Sharks Bay to the Gulf of Carpentaria, and penetrating southward through central Australia toward Spencers Gulf. A shrub 2 to 3 feet high, everywhere covered with a soft gray-green tomentum. (Adapted from *Curtis's Botanical Magazine, p. 5770.*)

41572. MALUS SARGENTII Rehder. Malaceæ.

From Tokyo, Japan. Presented by Dr. T. Watase, Tokyo Plant, Seed & Implement Co. Received December 4, 1915.

A shrub of bushy habit 3 to 5 feet high; leaves ovate to oval, 2 to 3 inches long, 1 to 2 inches wide; woolly when quite young, becoming nearly smooth before falling; flowers pure white, 1 inch across, produced in clusters of five or six; fruit orange shaped, one-half inch wide, bright red, the apex marked by the scar of the fallen calyx. I only know this species by a small specimen sent to Kew by Prof. Sargent in 1908, but it appears to be a pretty plant, and distinct among crabs by its purely bushy habit. It was originally discovered by Sargent in 1892 near a brackish marsh, Muroran, Japan, and was named in his honor by Mr. Rehder in 1903. The author observes that it is most nearly related to *P. toringo*, but differs in its larger, pure-white flowers with broad overlapping petals and in its larger fruits. From another ally, *P. zumi*, it is distinguished by its broader, often-lobed leaves, the shape of the broader based petals, the glabrous calyx tube, and the habit. Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 293.*)

41573. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela. Received December 20, 1915.

"Chayotes of the green variety. Of these four, one has been sprouted off the vine and the others on the vine. We, here in Cuba, either sprout on the vine or over water; that is, taking the chayote from the vine and putting it in the mouth of a wide-mouthed bottle until it sends out the sprout. It is also common to cut off the lower end of the fruit before planting and allow the wound to heal over either simply in the air or by covering the wound with ashes." (*Luáces.*)

41574. BARYXYLUM INERME (Roxb.) Pierre. Cæsalpiniaceæ.
(*Peltophorum ferrugineum* Benth.)

From Littleriver, Fla. Presented by Mr. Charles T. Simpson. Received December 3, 1915.

"A large, quick-growing, symmetrical tree, with a spreading top and fine graceful feathery foliage, indigenous to Ceylon and Malaya. The young leaves and shoots are covered with a brown velvet tomentum, from which the tree takes its specific name. The tree flowers twice a year at irregular seasons, some specimens being in blossom while others by its side are in ripe fruit. The flowers are rusty yellow, sweet scented, and borne in large erect panicles. Trimen, in his Flora of Ceylon, stated: 'It is a magnificent sight when in full bloom.' It is specially suited to dry districts, but also thrives to perfection in the moist region up to 1,800 feet." (*MacMillan, Handbook of Tropical Gardening and Planting, 2d ed., p. 299.*)

See S. P. I. Nos. 34330 and 38655 for previous introductions.

41575. ROYSTONEA FLORIDANA Cook. Phœnicaceæ. **Florida royal palm.**

The royal palm of Florida is commonly referred to *Oreodoxa regia*, though with very doubtful propriety. The branches of the inflorescence are much longer and more lax than those of the species of Cuba and Porto Rico, from which they also differ in the frequent development of tertiary branches, in this respect resembling *Roystonea oleracea*. The fruits do not resemble those of *Roystonea oleracea*, but are closely similar to those of the other species, though somewhat smaller and more nearly spherical. The Florida trees are from 28 to 35 meters high and occasionally as high as 45 meters, while the royal palms of Cuba and Porto Rico seldom exceed 18 meters. Mr. Charles T. Simpson, of the United States National Museum, states that the palms of southwestern Florida lack the conspicuous bulge so characteristic in the trunks of the Porto Rican trees and that they grow almost in reach of tidewater, while the natural habitat of the Porto Rican species is evidently the limestone hills. In view of these differences it seems preferable to treat the Florida royal palm as a distinct species, for which the name *Roystonea floridana* is proposed. (Adapted from *O. F. Cook, Bulletin of the Torrey Botanical Club, p. 554.*)

See S. P. I. No. 9731 and 17060 for previous introductions.

41576. TERMINALIA CATAPPA L. Combretaceæ. **Malabar almond.**

From Littleriver, Fla. Presented by Mr. Charles T. Simpson. Received December 3, 1915.

A handsome deciduous tree with branches in horizontal whorls, large alternate leaves, clustered toward the ends of the branches and usually turning scarlet before falling, and an edible almondlike fruit.

"A very common tree in Guam, often growing near the shore, but also found inland. The kernels of the fruit are of a fine almondlike consistency and flavor. The crows (*Corvus kubaryi*) are very fond of them, and the natives eat them as delicacies, either fresh or candied. The bark and leaves are astringent and contain tannin. In India they are mixed with iron salts to form a black pigment, with which the natives in certain localities color their teeth and make ink.

This species is an excellent shade tree. It is of wide tropical distribution and is often planted for ornament and for the sake of the nuts. It has been introduced into Hawaii and the natives have applied to it the Polynesian name for *Calophyllum inophyllum* (*kamanu* or *kamani*), owing to the appearance of its foliage, which from a distance looks somewhat like that of the latter species. It is easily propagated from the seed. The wood is hard and of a reddish color, the sapwood lighter colored than the heartwood. In Guam it is used for troughs, carts, and posts, and if *daog* wood (*Calophyllum inophyllum*) can not be obtained, it is used for making cart wheels, though it is inferior to that species in toughness and durability. The Fijians and Samoans make drums of the hollowed trunks." (*Safford, Useful Plants of Guam, p. 385.*)

See S. P. I. Nos. 33192 and 33655 for previous introductions.

41577. PRUNUS SERRULATA SPONTANEA (Maxim.) Wilson. Amygdalaceæ. **Cherry.**

From Kyoto, Japan. Presented by Miss E. R. Scidmore, Yokohama, Japan. Received December 11, 1915.

"Cuttings of *Yama zakura* (mountain cherry), the *Giou* cherry tree in Maruyama Park (Sea-Mountain Park), Kyoto. It is a drooping variety, and these cuttings must be grafted on a drooping variety to get good results." (*Scidmore.*)

41578 to 41580. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Guatemala City, Guatemala. Presented by the American vice consul. Received December 8, 1915. Quoted notes by the vice consul.

41578. "Seeds of soft-skin avocados. All selected fruit which averaged in weight 1 pound 2 ounces."

41579. "Round; skin hard."

41580. "Soft-skin Guatemala avocados, weighing up to 1 pound each."

41581 to 41618.

From Bhutan, India. Collected by Mr. R. E. Cooper. Presented by Bees (Ltd.), Liverpool, England, at the request of Mr. A. K. Bulley. Received December 8, 1915. Quoted notes by Mr. Cooper.

41581. PRIMULA ELONGATA Watt. Primulaceæ. **Primrose.**

"(No. 4087.) In sandy peaty soil at an altitude of 13,500 feet. Flowers white on stem 1 foot long, rosette of glabrous leaves, 8 inches in diameter."

41582. MECONOPSIS HORRIDULA Hook. f. and Thoms. Papaveraceæ.

"(No. 4810.) A many-stemmed plant, 6 inches high at an altitude of 14,000 feet on peaty turf over scree. Flowers blue, large; plant prickly.

41583. SWERTIA sp. Gentianaceæ.

"(No. 4812.) Tufted gentianaceous plant, growing in peaty turf among dwarf rhododendrons at an altitude of 15,000 feet. Spike of blue flowers 4 inches long."

41581 to 41618—Continued. (Quoted notes by Mr. R. E. Cooper.)

41584. SAUSSUREA sp. Asteraceæ.

"(No. 4818.) With papery translucent bracts; grows among fragments of granite rock and peaty soil on scree at an altitude of 14,000 feet. Plant 10 inches high; head 4 inches in diameter."

41585. LILIUM sp. Liliaceæ. **Lily.**

"(No. 4819.) Grows in turf on rock ledges at an altitude of 13,000 feet. Flowers reddish green, hanging bell-like on a 6-inch stem."

41586. CARDAMINE sp. Brassicaceæ.

"(No. 4821.) Small slender rambling crucifer with showy blue flowers growing over grass or turf by a stream at an altitude of 12,000 feet."

41587. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4822.) A *la tibetica* (blue sp.). Found only in fruit that was hardly ripe on exposed peak at an altitude of 16,000 feet, growing in a dryish but sunny position at the base of large overhanging rocks."

41588. ARENARIA sp. Silenaceæ.

"(No. 4824.) Tufted *Arenaria* sp. Grows on granite bowlders at an altitude of 14,000 feet. Flowers white."

41589. SALVIA sp. Menthaceæ.

"(No. 4825.) Pink-flowered, silvery, hairy plant 6 inches high on gravel and scarce peaty compost, mostly gravel, growing on scree at an altitude of 16,000 feet.

41590. MECONOPSIS NAPAULENSIS DC. Papaveraceæ.

"(No. 4827.) Plants growing on bare exposed hillside of patchy turf and bowlders at an altitude of 14,000 feet."

41591. SWERTIA HOOKERI C. B. Clarke. Gentianaceæ.

"(No. 4828.) A tall column (3 feet) of reddish flowers growing in peaty turf among dwarf junipers at an altitude of 13,000 feet."

41592. MECONOPSIS LYRATA (Cumm. and Prain) Fedde. Papaveraceæ.

"(No. 4840.) A yellow-flowered herb 3 feet high at base of rock cliffs in soil similar to that of Abies forest at an altitude of 11,000 feet."

41593. PRIMULA sp. Primulaceæ. **Primrose.**

"(No. 4855.) Allied to *Primula tibetica*, but only found in fruit not fully ripe on granite débris at an altitude of 16,000 feet."

41594. MORINA sp. Dipsacaceæ.

"(No. 4914.) Tall plant 1 to 2 feet high, arising from rosette of regular falling spiny leaves; whorls of reddish (?) flowers on upright prickly bracted stem; growing in sheltered recess of bare exposed hill in little plat of turf over gravel at an altitude of 10,500 feet."

41595. CORIARIA TERMINALIS Hemsl. Coriariaceæ.

"(No. 4757.)" See S. P. I. No. 41562 for previous introduction and description.

41581 to 41618—Continued. (Quoted notes by Mr. R. E. Cooper.)

41596. SAMBUCUS ADNATA Wallich. Caprifoliaceæ.

" (No. 4794.) Caprifoliaceous herb on loamy bank in Picea forest at an altitude of 9,000 feet. Head 10 inches in diameter, of scented white flowers turning to red fruits."

41597. SAUSSUREA GOSSIPIPHORA D. Don. Asteraceæ.

" (No. 4815.) A white woolly mass 10 inches high and 6 inches in diameter, on granite and peaty débris at an altitude of 14,000 feet."

41598. RUBUS sp. Rosaceæ. **Bramble.**

" (No. 4685.) "

41599. ALLIUM sp. Liliaceæ.

" (No. 4816.) Three feet tall in moist turf and gravel by the edge of a stream, usually with *Primula sikkimensis*, at an altitude of 12,000 feet. Head of white flowers."

41600. CARAGANA sp. Fabaceæ.

" (No. 4882.) Tufted legume with wiry pinnate leaves, on exposed turf of hillside at an altitude of 12,000 to 13,000 feet.

41601. CARAGANA BREVISPINA Royle. Fabaceæ.

" (No. 4883.) Spiny shrub 6 feet high. Grows in shade by stream in gravelly soil under Abies forest and oaks at an altitude of 10,000 feet."

41602. POTENTILLA CORIANDRIFOLIA D. Don. Rosaceæ.

" (No. 4886.) A tufted herb 4 inches in diameter, growing in rock crevices and open thin turf over gravel at an altitude of 13,000 feet. Flowers white, center dark red."

41603. SWERTIA MULTICAULIS D. Don. Gentianaceæ.

" (No. 4890.) A blue-flowered, tufted plant occurring in poor, black, sodden soil among scree débris (granite) at an altitude of 15,000 feet."

41604. POTENTILLA sp. Rosaceæ.

" (No. 4891.) Drooping lax habit, from rock ledges on granite bowlders and cliffs at an altitude of 15,000 feet."

41605. SAXIFRAGA sp. Saxifragaceæ. **Saxifrage.**

"(No. 4893.) On peaty meadow at an altitude of 13,000 feet. Flowers yellow."

41606. GENTIANA sp. Gentianaceæ. **Gentian.**

"(No. 4895.) Tufted plant on granite débris and a little peaty soil at an altitude of 15,000 feet. Flowers blue."

41607. GENTIANA sp. Gentianaceæ. **Gentian.**

"(No. 4896.) Rosette plant growing among No. 4895 [S. P. I. No. 41606]. Flowers blue."

41608. SAUSSUREA GOSSIPIPHORA D. Don. Asteraceæ.

"(No. 4897.) A white woolly clump 8 inches in diameter, growing on rock ledges among stone chips and poor soil at an altitude of 15,000 feet."

41581 to 41618—Continued. (Quoted notes by Mr. R. E. Cooper.)

41609. MECONOPSIS sp. Papaveraceæ.

"(No. 4898.) A bushy, spiny plant among bowlders and gravel on an island of a stream at an altitude of 13,000 feet. Flowers, 24 to a plant not seen. Either *Meconopsis horridula* or *Meconopsis sinuata*, but typical of neither."

41610. HYDRANGEA sp. Hydrangeaceæ.

"(No. 4900.) Bush 3 feet high in peaty and sandy soil in the shelter of a hill by a stream at an altitude of 12,000 feet. Best ever."

41611. GENTIANA sp. Gentianaceæ. **Gentian.**

"(No. 4901.) An herb 4 feet high growing among rhodendron scrub at an altitude of 12,500 feet. Yellow, well-shaped flowers."

41612. SAUSSUREA sp. Asteraceæ.

"(No. 4904.) A tufted plant in peaty turf at an altitude of 13,000 feet. Flowers purple, rosette 8 inches in diameter, leaves much cut and frilled."

41613. SAXIFRAGA sp. Saxifragaceæ. **Saxifrage.**

"(No. 4905.) Mat habited on peaty turf at an altitude of 13,000 feet. Flowers pink and white on 2-inch upright stems."

41614. SAUSSUREA sp. Asteraceæ.

"(No. 4906.) A woolly gray mound 6 inches in diameter on scree débris at an altitude of 14,000 feet. Flowers yellow."

41615. CYANANTHUS LOBATUS Wallich. Campanulaceæ.

"(No. 4908.) Procumbent herb on turf at an altitude of 13,000 feet, with erect, large blue flowers."

41616. SESELI sp. Apiaceæ.

"(No. 4909.) A graceful tufted umebllifer, 6 to 10 inches high, on sandy turf at an altitude of 13,000 feet. Head of pink and white flowers."

41617. CYANANTHUS sp. Campanulaceæ.

"(No. 4910.) (Perhaps new.) A small tufted plant, rosette only 4 inches in diameter in fruit. Grows in gravelly and peaty turf by a lake at an altitude of 13,000 feet."

41618. ANISOMELES OVATA R. Brown. Menthaceæ.

"(No. 4913.) An herb 4 inches high with white, solitary large flowers. On gravelly exposed sites at an altitude of 10,500 feet."

41619. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received December 15, 1915.

"A native pink-flowered bean growing on the beach or seacoast here to a length of 20 or 30 feet. It is regarded as a poisonous plant by some writers, although it is said to be a good poultry food." (*Harrison.*)

41620. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. **Sword bean.**

From Chungking, China. Presented by Mr. E. Widler. Received December 21, 1915.

"*Ta tao tou*, great bean. A plant 10 to 15 feet long, bearing red flowers; it takes about six months to grow, and fruits in the autumn. It does best in a

climate of 70° to 100° F. It bears fruit 1 foot 8 inches long, 5 inches in circumference. The seeds are light red and are used principally as a vegetable, being prepared by boiling. They sell in the market for 20 cash each string." (*Widler.*)

41621. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Orotina, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 23, 1915.

Light green.

41622. GARCINIA sp.

From Brazil. Collected by Mr. H. M. Curran. Received December 20, 1915.

"Species cultivated in the Rio de Janeiro Botanical Gardens. Trees 30 to 40 feet high, 16 to 18 inches in diameter, with a heavy crop of large fruit, approximately 2 inches in diameter, with yellow acid flesh. Probably a common variety from India." (*Curran.*)

41623 and 41624.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received December 16, 1915.

41623. EUCALYPTUS KIRTONIANA F. Mueller. Myrtaceæ. **Eucalyptus.**

"Seeds collected in this garden from trees known here for many years as *Eucalyptus saligna* and recently identified by Maiden as *Eucalyptus kirtoniana*. The seeds were probably originally from Australia." (*Hartless.*)

41624. TAMARIX DIOICA Roxburgh. Tamaricaceæ. **Tamarisk.**

A small tree with drooping branches and clustered twigs, smooth green leaves, and panicled spikes of small pink flowers with purple anthers. Native of India and Burma. (Adapted from *Hooker, Flora of British India, vol. 1, p. 249.*)

41625 and 41626. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela. Received December 28, 1915.

41625. White. **41626.** Long green.

41627 and 41628. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received December 28, 1915.

41627. Round white, spiny. **41628.** Round green, spiny.

41629. PERSEA AMERICANA Miller. Lauraceæ. **Avocado.**
(*Persea gratissima* Gaertn. f.)

From Guatemala City, Guatemala. Presented by Mr. William Owen, American vice consul in charge. Received December 28, 1915.

"Seeds from a very large *aguacate*, which I consider the finest product of Guatemala in that line. They are high grown, which will enable the tree to

thrive better in a northern climate. Aguacate trees are not numerous in the immediate neighborhood of this city. I am compelled to depend almost entirely upon the goodness of distant friends." (*Owen.*)

41630 to 41637.

From Shanghai, China. Presented by Mr. H. O. Jacobson, Bureau of Agriculture, Manila, who secured them from Rev. J. M. W. Farnham. Received December 11, 1915.

41630. AGYNEJA IMPUBES L. Euphorbiaceæ.

41631 to 41634. BENZOIN spp. Lauraceæ.

41635. EUSCAPHIS JAPONICA (Thunb.) Dippel. Staphyleaceæ.
(*Euscaphis staphyleoides* S. and Z.)

See S. P. I. No. 41263 for previous introduction.

41636. VIBURNUM sp. Caprifoliaceæ.

41637. ARALIA CHINENSIS MANDSHURICA (Rupr.) Rehder. Araliaceæ.

See S. P. I. No. 35148 for previous introduction.

41638 to 41672.

From Brazil. Collected by Mr. H. M. Curran. Received December 20 to 23, 1915. Quoted descriptive notes by Mr. Curran.

41638 to 41640. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. (*Hibiscus esculentus* L.) **Okra.**

"Common forms of okra grown in the mountains of Rio Contas, Bahia, Brazil."

41638. (No. 26.)

41639. (No. 27.)

41640. (No. 56.)

41641 to 41643. ALLIUM CEPA L. Liliaceæ. **Onion.**

"Common forms of onion grown in the mountains of Rio Contas, Bahia, Brazil."

41641. (No. 22.) White.

41642. (No. 22.) Red.

41643. (No. 22.) Yellow.

Bulbs.

41644. ARISTOLOCHIA sp. Aristolochiaceæ.

"(No. 13.) A very ornamental climber with heart-shaped velvety leaves. Flowers odd and interesting, but not showy. A rapid grower, covering trees and bushes by the river. Common in cleared lands along Rio Contas, Bahia, Brazil."

41645. BEGONIA sp. Begoniaceæ. **Begonia.**

"(No. 35.) Common wild form in forest of mountains of Rio Contas. Grows close to the ground; 4 to 6 inches; leaf large, entire, flower stalks erect, 2 to 3 feet high, with masses of white flowers. A showy ornamental."

41646. CAJAN INDICUM Spreng. Fabaceæ. **Pigeon pea.**

"(No. 11.) *Andu branco.* An edible bean, much like species grown in the Orient, but differs in minor ways. A tall bush 4 to 6 feet in height, bearing yellow, pearlike flowers. Planted in clearings in the mountains of Rio Contas, Bahia, Brazil."

41638 to 41672—Continued. (Quoted notes by Mr. H. M. Curran.)

41647. CARICA PAPAYA L. Papayaceæ. **Papaya.**

"(No. 53.) Papaya, called by Brazilians *Mamão*. Common form that grows in the clearings in the mountains of Rio Contas, Bahia, Brazil. Of medium size and excellent flavor; not cultivated, but distributed by birds. Abandoned portions of clearings are often a pure forest of this plant."

41648. CHRYSOPHYLLUM sp. Sapotaceæ.

"(No. 55.) Sapotaceous fruit from wild trees in the forest. The fruit has a thin, tough skin and soft yellow flesh, with a texture much like that of a ripe persimmon. The flavor of the fruit is slightly acid and very agreeable. One of the best forest fruits I have ever eaten. From the forests of Rio Contas, Bahia, Brazil."

41649. CUCURBITA PEPO L. Cucurbitaceæ. **Squash.**

"(No. 37.) Common squash of clearings, Rio Contas mountains, Bahia, Brazil. Small or medium size, green exterior, yellow or orange flesh, of excellent flavor, said to keep six months. The specimens from which these seeds were obtained had very few seeds."

41650. DIOSPYROS GUIANENSIS (Aubl.) Guerke. Diospyraceæ.

"(No. 36.) Wild Diospyros; no common name. A small ornamental tree 20 feet high, 4 inches in diameter. Fruit probably not edible and possibly poisonous. Wood and character of fruit similar to a poisonous species in tropical Philippine forests which is used as a fish poison."

41651. EUGENIA DOMBEYI (Spreng.) Skeels. Myrtaceæ. **Grumichama.**
(*Eugenia brasiliensis* Lam., not Aubl.)

"With edible fruit. An ornamental shrub or small tree with small leaves."

41652. HIBISCUS BIFURCATUS Cav. Malvaceæ. **Mallow.**

"No. 33.) Common pink mallow of clearings and along river banks. A scandent shrub, or almost a vine. Very effective as seen from the river, with its great masses of pink bloom. Plant climbs 15 to 20 feet, and the slender branches could be trained over porches, etc. A very profuse and continual bloomer and one of the most showy flowers of the mountains of Rio Contas, Bahia, Brazil."

41653. IPOMOEA sp. Convolvulaceæ.

"(No. 29.) Showy vine of clearings; wild and also cultivated. A rapid grower with attractive foliage and large bright yellow flowers borne in profusion. Bahia, Brazil."

41654. ZINZIBER OFFICINALE Rosc. Zinziberaceæ. **Ginger.**

"(No. 58.) Common cultivated ginger of the clearings in the mountains of Rio Contas, Bahia, Brazil."

41655. ORYZA SATIVA L. Poaceæ. **Rice.**

"(No. 16.) Common rice cultivated along Rio Gorgueia, Bahia, Brazil. Probably not an irrigated form, but grown in clearings in the forest."

41656 to 41658. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"Lima or butter beans, grown in clearings in mountain forests, Rio Contas, Bahia, Brazil. These beans climb over mandioca plants and brush in clearings."

41656. "(No. 15.) White beans, of excellent flavor, borne abundantly."

41638 to 41672—Continued. (Quoted notes by Mr. H. M. Curran.)

41657. "(No. 1.) Black and white Lima beans of good flavor. A common form in clearings."

41658. "(No. 12.) Black and white Lima beans of good flavor. A common form in clearings."

41659 and 41660. PHASEOLUS VULGARIS L. Fabaceæ. **Bean.**

"Common beans of the natives, called *Feijãos*. With mandioca meal, the staple diet of the common people. Easily cooked and of good flavor. Planted in forest clearings. Plants seen were of bushy habit, but inclined to climb. Many varieties are grown, varying from red to jet black and the common spotted bean. In the mountains of Rio Contas, Bahia, Brazil."

41659. (No. 10.) **41660.** (No. 24.)

41661 to 41664. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor bean.**

41661. "(No. 4.) Called *Mamoneira*. A small variety growing wild in light sandy soil on clearings near the river. Castor beans form dense thickets on pasture lands in this region. This is the smallest of the three types collected in the region, all of which grow in more or less intimate mixture, and it is said to yield the best oil and the largest quantity."

41662. "(No. 8.) The largest plant and the largest seed; a very heavy bearer. Forms a tree 15 to 25 feet high. Said to yield less oil than the smaller variety. Grows in light sandy soil on clearings near the river. Called *Mamona* or *Carrapato*. Mountains of Rio Contas, Bahia, Brazil."

41663. "(No. 14.) A third form of castor bean, commonly growing wild in light sandy soil on clearings near the river. A tall grower and heavy fruiter. Rio Contas, Bahia, Brazil."

41664. "(No. 25.) Probably the same form of castor bean as No. 14 [S. P. I. No. 41663]. Rio Contas, Bahia, Brazil."

41665. SICANA ODORIFERA (Vell.) Naud. Cucurbitaceæ. **Melocoton.**

"(No. 34.) Common half-wild yellow-fleshed melon of clearings, mountains of Rio Contas. It is 12 to 14 inches long by 3 to 5 inches in diameter, with a reddish and tough, not very palatable flesh. A strong grower, which climbs on trees in clearings."

41666 to 41670. THEOBROMA CACAO L. Sterculiaceæ. **Cacao.**

41666. "(No. 62.) Var. *Para*. These seeds are from the largest and most nearly perfect fruits found in a young vigorous plantation on new soil; mountains of Rio Contas. They represent the best type of cacao grown in this region. Rio Contas basin is one of the big cacao regions and produces a fine quality of cacao beans."

41667. "(No. 63.) See No. 62 [S. P. I. No. 41666] for description."

41668. "(No. 64.) *Eggshell* variety. A small form of fruit with a thin shell and few seeds. Occurs in all plantations, but not selected for planting, as the yield is less. From a young vigorous plantation on new soil. Mountains of Rio Contas, Bahia, Brazil."

41638 to 41672—Continued. (Quoted notes by Mr. H. M. Curran.)

41669. "(No. 65.) Var. *Para*, called *Maranhão*. Probably the same as Nos. 62 and 63 [S. P. I. Nos. 41666 and 41667], though preferred by certain planters. Large perfect fruits selected by Col. Manoel Couros from trees on his plantation were the sources of these seeds."

41670. "(No. 66.) Var. *Para*. See No. 65 [S. P. I. No. 41669] for description."

41671. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.
(*Dolichos sesquipedalis* L.) **Yard-long bean.**

"(No. 57.) Yard-long bean; a climbing variety with edible pods. A rapid grower, said to fruit in 30 days. Rio Contas, Bahia, Brazil."

41672. CITRUS AURANTIUM L. Rutaceæ. **Sour orange.**

"Wild or *Bello* orange. The common orange of clearings. Seeds distributed by birds. A common form in all regions of South America where oranges are grown. A small vigorous tree, practically free from disease. Fruits at an early age and bears an immense crop of dark rust-red perfect oranges. The skins are thick, and they separate from the pulp as easily as those of the mandarin. The pulp is fine grained, very juicy, and with only a slightly bitter taste (in this specimen). Many people prefer this to the sweet orange. To me, it is one of the most refreshing fruits I know. It should prove a good stock for budding, and may prove useful in developing a new variety of table orange."

41673 to 41678.

From India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Saharunpur, at the request of Mr. A. Howard, Imperial Economic Botanist, Pusa. Received December 30, 1915. Quoted notes by Mr. Hartless, except as otherwise indicated.

41673 to 41676. RUBUS spp. Rosaceæ.

Collected at Darjiling.

41673. RUBUS NIVEUS Thunb.
(*Rubus lasiocarpus* Smith.)

41674. RUBUS ALPESTRIS Blumé.

41675. RUBUS CALYCINUS Wallich.

41676. RUBUS PEDUNCULOSUS Don.
(*Rubus niveus* Wallich, not Thunb.)

"A deciduous shrub, with very stout, erect, biennial stems 1 to 1½ inches thick and in vigorous plants 4 to 6 yards high, covered with a thick velvety down and sprinkled over with minute prickles. Leaves 6 to over 12 inches long, composed of three to five leaflets. Flowers white or pale pink, one-half inch across, the petals shorter than the sepals. Fruits blue-black, small. Native of west and central China, whence it was introduced about 1901; the species had, however, been known to botanists as far back as 1825 from plants growing on the Himalayas. The Chinese plants are chiefly remarkable for their vigor; Mr. Wilson states that it is occasionally 20 feet high. It is the most robust of all the Rubi; hardy in Britain, as

41673 to 41678—Continued. (Quoted notes by Mr. A. C. Hartless.)

may be seen by the plants in the Kew collection." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 458,* under *R. gracilis.*)

41677 and 41678. RUBUS spp. Rosaceæ. **Blackberry.**

"Collected at Dehra Dun, which is subtropical. These two species have a very wide range as to altitude and are really the two best species from an edible point of view."

41677. RUBUS NIVEUS Thunb.
(*Rubus lasiocarpus* Smith.)

"In the Western Ghats *Rubus lasiocarpus* is well known as the blackberry of India. It is even grown with success at Bangalore."

41678. RUBUS ELLIPTICUS Smith.

41679. KOELREUTERIA FORMOSANA Hayata. Sapindaceæ.

From Taihoku, Formosa. Presented by Mr. Genjiro Takata, chief, Bureau of Productive Industry. Received December 31, 1915.

An indigenous Formosan tree related to *K. bipinnata* Franch., but differing from that species in having subentire leaflets. A small handsome tree with bipinnate leaves and terminal spreading clusters of yellow flowers.

41680. ELEOCHARIS TUBEROSA (Roxb.) Schultes. Cyperaceæ. **Apulid.**

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Bulbs received December 28 and 29, 1915.

"Small corms of *Apulid.* Larger forms are great favorites with the Chinese." (*Edwards.*)

"They are mostly eaten raw, but are also sliced and shredded in soups, and in meat and fish dishes. Foreigners in China grate them and serve them boiled as a winter vegetable, in which state they very much resemble sweet corn in looks and taste. The plants need a hot summer to mature and are grown on a muck or clayey soil with several inches of standing water on top, in very much the same manner as wet-land rice." (*Frank N. Meyer.*)

41681. MELASTOMA MOLKENBOERII Miquel. Melastomaceæ.

From Lawang, Java. Presented by Mr. M. Buysman, Jardin Botanique. Received December 30, 1915.

A large shrub or small tree, 15 to 20 feet high, with oblong or ovate-lanceolate, 5-nerved, pubescent leaves and terminal, rose-colored flowers in fascicles of three to five. (Adapted from *Koorders and Valeton, Mededeelingen uit s'Lands Plantentuin, No. 33, p. 183, 1900.*)

41682 to 41684. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*Triticum vulgare* Vill.)

From Pusa, India. Presented by the Imperial Economic Botanist. Received December 16, 1915.

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THE FARMERS OF THIS COUNTRY are as efficient as any other farmers in the world. They do not produce more per acre than the farmers in Europe. It is not necessary that they should do so. It would perhaps be bad economy for them to attempt it. But they do produce by two to three or four times more per man, per unit of labor and capital, than the farmers of any European country. They are more alert and use more labor-saving devices than any other farmers in the world. And their response to the demands of the present emergency has been in every way remarkable. Last spring their planting exceeded by 12,000,000 acres the largest planting of any previous year, and the yields from the crops were record-breaking yields. In the fall of 1917 a wheat acreage of 42,170,000 was planted, which was 1,000,000 larger than for any preceding year, 3,000,000 greater than the next largest, and 7,000,000 greater than the preceding five-year average.

But I ought to say to you that it is not only necessary that these achievements should be repeated but that they should be exceeded. I know what this advice involves. It involves not only labor but sacrifice, the painstaking application of every bit of scientific knowledge and every tested practice that is available. It means the utmost economy, even to the point where the pinch comes. It means the kind of concentration and self-sacrifice which is involved in the field of battle itself, where the object always looms greater than the individual. And yet the Government will help, and help in every way that is possible.—*From President Wilson's message to the Farmers' Conference at Urbana, Ill., January 31, 1918.*